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Prevalence and Determinants of unintentional injury among out of school adolescents in Ojo Local Government Area, Lagos State

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Abstract

Introduction:

Unintentional injuries are a significant public health concern among adolescents in sub-Saharan Africa (SSA), particularly for out-of-school adolescents who experience increased risks of injuries because of lack of education, living in hazardous environments and poverty. Unintentional injuries cause major health and economic challenges as well as health problems for families, communities and nations. The overall burden of unintentional injuries is estimated to have affected over 42 million people in SSA with 6% of this burden in Nigeria.

Aim

To determine the prevalence and identify the social and behavioural determinants of unintentional injuries among out-of-school adolescents in Ojo Local Government Area, Lagos State, Nigeria.

Methods

This was a cross-sectional study conducted in December 2024. Three hundred and twenty-nine out-of-school adolescents in Ojo Local Government Area, Lagos State, were recruited by multistage sampling technique. Data was analysed using SPSS. Chi-square was used to test for associations between variables, and binary logistic regression was used to assess factors associated with the experience of unintentional injury among respondents at 5% significance level.

Key Findings:

The mean age of respondents was 14.54 ± 2.72 years. Most of respondents, 170 (51.7%), reported they had experienced unintentional injury 6 months prior to the study. The most reported unintentional injury was cut 148 (45%). Twenty-nine (8.8%) of respondents engaged in alcohol consumption six months prior to the study. Some of the respondents 112 (34%) engaged in distracting behaviours such as texting while walking. Respondents who consumed alcohol were more likely to experience unintentional injuries compared to those who did not consume alcohol 30 days prior to the study (AOR = 2.73, 95% CI = 2.73 (1.17–6.37). Respondents who engaged in distracting behaviours were twice more likely to experience unintentional injuries significantly compared to those who did engage in distracting behaviours (AOR = 2.06, 95% CI = 1.29–3.30).

Conclusion

Alcohol consumption and engagement in distracting behaviours are strongly associated with experience of unintentional injury. It is essential to raise awareness among out-of-school adolescents about unintentional injuries, including their causes and consequences. Preventive measures such as peer monitoring initiatives should be implemented to help reduce the occurrence of these injuries.

INTRODUCTION

Adolescence is a period of life from the age of 10 to 19 years; it is an important period of human development (1). Adolescence is a stage of life between childhood and adulthood when adolescents' maturation evolves through physical, psychological, and social changes. Unintentional injuries (UIs) is defined as physical harm that happens unexpectedly to human body (2). Globally, unintentional injuries constitute crucial public health concern, especially among adolescents, where they are a leading cause of illness and death. Unintentional injuries include road traffic crashes, falls, burns, drowning, and poisoning and they account for nearly 10% of all fatalities among adolescents. These health issues have a long-term effect such as physical and mental disability, affecting the quality of life for the adolescents involved (3).

According to the World Health Organization, injuries account for 5 million deaths worldwide annually with unintentional injuries contributing to nearly 80% of these fatalities (approximately 3.9 million deaths)(4). A study on adolescents in six sub-Saharan African countries found that 68.2% had experienced at least one serious UIs. The prevalence varied across countries with the highest rates reported in Zambia (71.5%), 71.0% in Kenya, 63.4% in Uganda, 62.8% in Zimbabwe, 60.2% in Namibia, and 38.6% in Swaziland (5). Injuries occur commonly among adolescents, who are the largest percentage of many populations.

In Nigeria, adolescents represent almost 23% of the general population (6). Unintentional injuries is caused by several conditions including rapid urbanization and motorization (7). A study in Nsukka Education zone of Enugu State among secondary school students reported that distribution of causes of injuries among adolescents are road traffic injuries-25%, poisoning-6%, falls-6%, drowning-9%, violence-16%, self-inflicted violence-16% and others. The study also revealed that male adolescents are been injured more frequently than females at a ratio of 3:1 (8).

Demographic and socioeconomic factors such as age, gender, low income, and living conditions have been reported to influence the occurrence of unintentional injuries (9). Adolescents are prone to UIs due to their risky behaviours such as alcohol consumption and substance abuse (10). Other factors linked to unintentional injuries include participation in sports in schools (11, 12) experiences of being bullied (13, 14, 15) and involvement in physical fight (13, 14). Additionally, absence from school, early age sexual practice, depression and feeling of loneliness are associated with higher rates of UIs (16). The support from parents or guardians plays an important role in reducing the risk (11, 17)

Several studies have shown that adolescents who are out-of-school experience worse health implication (16, 18). Schooling status has been reported as an important determinant in participation in risky

behaviours which may result in UIs (18). A study showed that out-of-school adolescents are more likely to be involved in alcohol consumption, tobacco smoking and risky behaviours (19). Furthermore, lack of formal education has been linked to increased susceptibility to exploitation and poorer mental health outcomes (20).

Reducing the burden of UIs among adolescents requires a broad understanding of the various factors contributing to these injuries. These factors include adolescent behaviours, environmental factors and social risks (3). This study is relevant to SDG 3: Good Health and Well-being, which aims to reduce the global burden of preventable injuries by improving safety measures, health education, and access to health services. By identifying the specific risk factors and vulnerability of out-of-school adolescents, this research can help inform strategies to reduce injury rates and improve the overall well-being of this population. This study was conducted to 1) determine the prevalence 2) assess the pattern and 3) determinants of unintentional injuries, among out of school adolescents in Ojo Local Government Area, Lagos State, Nigeria.

METHODS

Study design and site

This was a cross-sectional study conducted in two wards in Ojo Local Government Area, Lagos State between November and December 2024. Lagos State is bounded by Ogun State to the north, Bight of Benin to the south and Benin Republic to the west. Lagos is the most populous City in Nigeria. The population of Lagos State is estimated to be 13,491,800 and the proportion of adolescents accounted for 12.66% of the population (21). Ojo Local Government Area is one of the 20 local government areas in Lagos State, Nigeria. The LGA is densely populated with poor infrastructure and busy commercial activities such markets. The notable markets in the LGA include Iyana Iba Market, Alaba Livestock Market, Lagos State University, Old Lagos International Trade Fair complex, Alaba International Market, Divisional headquarters of the 81st Division of the Nigerian Army and Navy Town.

Study population

The study population included out of school male and female adolescents (aged 10–19 years) living in Ojo Local Government Area, including those who were in community centers and vocational centers. The study excluded adolescents who were ill at the time of data collection.

Sample size

The sample size was determined using the formula for single proportion, a prevalence of 73.6% was used from a study “Epidemiology of non-fatal injuries among adolescents in an urban Niger delta community of Nigeria” (22). The minimum sample size for the study was approximately 329.

Sampling

A multistage sampling technique was adopted in this study. Two wards were selected from the list of 11 wards in Ojo Local Government Area, Lagos State by simple random sampling. From the list of the selected wards, five communities each were selected by simple random sampling. In the selected communities, respondents were recruited from households and vocational workshops by snowballing sampling.

Study instrument

The questionnaire was adapted from a study on prevalence and factors associated with interpersonal violence (14). The structured questionnaire was categorised into sections as follows.

Section A: Socio-demographic information: This included questions on age, sex, ethnicity, religion, educational level, who respondent lived with, family type, household size, parents' occupation, parents' average monthly income, and parents' possession

Section B: Experience of unintentional injuries among the respondents: This included questions on; experience of unintentional injuries such as cuts, fractures or broken bones, road traffic accidents, sports-related injury etc.; experience of at least one form of the following injury: cuts, sprains or strains, fractures or broken bones, burns, head or neck injury, poisoning or overdose, road traffic accident, drowning, sports related injury, fires, animal biting and others; experience of at least one form of the following injury six months prior to the study: cuts, sprains or strains, fractures or broken bones, burns, head or neck injury, poisoning or overdose, road traffic accident, drowning, sports related injury, fires, animal biting and others. Other questions were on location of the respondent's injury; Home, public space, playground, neighborhood, road, school, place of work and others.

Section C

This included questions on behavioural characteristics of the respondents

Measures

Independent variables

Respondents' sociodemographic information: age (years) was categorized into three categories; 10–13 years, 14–16 years, and 17–19 years. Sex was classified into two categories: male and female. Ethnicity was categorized into four categories: Yoruba, Igbo, Hausa, and others (Tiv, Egun, Igala, and Edo). Religion was classified into two categories: Christianity and Islam. Educational level was categorized into four categories: no formal education, primary, secondary, and tertiary. Behavioural/psychosocial characteristics of the respondents; variables such as consumption of alcohol, consumption of alcohol 30 days prior to the study, kind of alcohol consumed 30 days prior to the study: spirit, palm wine, whisky,

beer, wine, and others; parental consumption of alcohol, smoking of cigarette, parental use of tobacco, use of substance, physical attack experience, physical fight experience, being bullied, loneliness, friends who encourage safe behavior, participation in group sport, role model who promote safety, protective gear usage and engagement in distracting behaviours while in physical activities were all listed and had two responses: Yes and No which were coded as 1 and 2 respectively.

Outcome variables

Outcome variables
Experience of unintentional injury among respondents: At least one form of unintentional injury in lifetime was classified into two categories; yes and no. Lifetime injury type was categorized into eleven (multiple responses allowed); cuts, sprains or strains, fractures or broken bones, burns, head or neck injuries, poisoning or overdose, road traffic accident, drowning, sports-related injury, fires, and animal biting.

Six months injury type prior to the study was categorized into eleven (multiple responses allowed); cuts, sprains or strains, fractures or broken bones, burns, head or neck injuries, poisoning or overdose, road traffic accident, drowning, sports-related injury, fires, and animal biting.

Data was collected using an interviewer administered questionnaire. The questionnaires were administered by three trained research assistants with at least Higher National Diploma (HND) who had one-day training on data collection before the commencement of the study.

Data was stored electronically into Statistical Package for Social Sciences (SPSS) software. Data was reviewed for completeness and accuracy. Descriptive statistics such as frequencies, proportions, charts, and tables was used to summarize categorical data. Continuous variables were computed as mean and standard deviation. Chi square was used to test for association between unintentional injury experience and respondents' socio-demographics. Binary logistic regression was used to identify factors associated with unintentional injury experience. The level of statistical significance for all analyses were set at a p-value < 0.05.

Ethical approval was obtained from Lagos State Health Research Committee Ministry of Health (LSHREC/2024/0034). Assents were obtained from respondents younger than 18 years and informed consents were obtained from the respondents' parents and respondents older than 18 years. The purpose and objectives of research were explained to the respondents before obtaining consent. Confidentiality of respondents' personal information was maintained.

RESULTS

Three hundred and twenty-nine respondents participated in the study. The mean age at last birthday of respondents in the study was 14.54 years. Fifty-nine (17.9%) of the respondents were 14 years old. One

hundred and seventy-seven (53.8%) of the respondents were male. Majority of the respondents 235 (71.4%) were of Yoruba ethnic group. One hundred and four (31.6%) of the respondents had no formal education, 65 (19.8%) of the respondents have had primary education, 130 (39.5%) have had secondary education and 27 (8.2%) had tertiary education. One hundred and ninety-six (59.6%) of the respondents practiced Christianity. Table 1

Seventy (21.3%) of the respondents lived with their mother alone, 63 (19.1%) of the respondents lived with their father alone while majority of the respondents 193 (58.7%) lived with both parents. Majority of the respondents, 286 (86.9%) lived with nuclear families. The median household size of respondents was 4.00 (range = 9). The median number of individuals that sleep in a room of the respondents was 2.00 (range = 5). One hundred and seventeen (35.5%) parents/guardian of the respondents were in the work category as Business (Logistics, warehousing, retailing etc). Majority 263 (79.8%) of the respondents' parents/guardian earned ≤ 100,000 naira monthly. Ninety (27.4%), 228 (69.3%), 302 (91.8%), 44 (13.4%), 153 (46.5%) and 125 (38%) of the respondents' parents/guardians possess cars, television, mobile phones, laptops, refrigerators and own land respectively. Table 2

Lifetime Prevalence of unintentional injury

The overall lifetime prevalence of unintentional injury was 100%. Two hundred and seven (62.9%), 111 (33.7%), 102 (31%) and 197 (59.9%) of the respondents had experienced cuts, fractures or broken bones, head or neck injuries and sports related injury respectively in their lifetime. Table 3

P**revalence of unintentional injury six months prior to the study**

One hundred and forty-eight (45%), 51 (15.5%) and 55 (16.7%) of the respondents, in the last 6 months, had experienced cuts, sprains or strains and sports related injuries respectively. Table 3

Figure 1 shows that 170 (51.7%) of the respondents had experienced at least one form of unintentional injury six months prior to the study.

Association between respondents' sociodemographic characteristics and unintentional injury experience

Table 4 summarized the association between experience of unintentional injury six months prior to the study and sociodemographic information of the respondents.

There was a significant association between sex and unintentional injury experience, with males being more likely to experience unintentional injuries ($p < 0.05$). There was also a significant association between educational level and unintentional injury experience, with those having secondary education being most likely to experience unintentional injuries ($p < 0.001$). Other sociodemographic variables: age, ethnicity and religion of the respondents did not show a significant association with unintentional injury experiences.

Association between respondents' behavioural characteristics and unintentional injury experience

Table 5 showed the relationship between various behavioral factors and unintentional injury experiences.

Respondents who reported recent alcohol consumption 30 days prior to the study had more unintentional injury experiences ($p = 0.016$). There was also a significant association between being physically attacked and unintentional injury experiences ($p = 0.035$). There was a significant association between unintentional injury experiences and being bullied in the neighborhood ($p = 0.005$) and loneliness ($p = 0.002$). There was also a significant association between unintentional injury experiences and participation in group sports ($p < 0.001$) and having a mentor or role model promoting safety ($p = 0.003$). There was also a significant association between distraction and unintentional injury experiences (P-value = 0.002).

Table 1
Respondents' sociodemographic information

Variables	Frequency (n = 329)	Percentage (%)
Age (years)		
10–13	110	33.4
14–16	139	42.3
17–19	80	24.3
Mean age	14.54 ± 2.72	
Sex		
Male	177	53.8
Female	152	46.2
Ethnicity		
Yoruba	235	71.4
Igbo	77	23.4
Hausa	11	3.4
Others*	6	1.8
Religion		
Christianity	196	59.6
Islam	133	40.4
Educational level		
No Formal education	104	31.6
Primary	65	19.8
Secondary	130	39.5
Tertiary	27	8.2

*Tiv, Egun, Igala and Edo

Table 2
Respondents' sociodemographic information

Variables	Frequency (n = 329)	Percentage (%)
Person(s) respondents live with		
Mother alone	70	21.3
Father alone	63	19.1
Both parents	193	58.7
Guardian	3	0.9
Respondents' type of family		
Nuclear	286	86.9
Extended	43	13.1
Respondents' Household size		
≤ 5	264	80.2
> 5	65	19.8
Respondents' room occupancy		
≤ 3	314	95.5
> 3	15	3.5
Parents' occupation		
Business (Logistics, warehousing, retailing etc)	116	35.3
Civil Service	36	10.9
Farming	13	4.0
Others*	164	49.8
Parents' average monthly income (naira)		
≤ 100,000	263	79.8
> 100,000	66	20.2
Parents' possession		
Car	90	27.4
Television	228	69.3
Mobile Phones	302	91.8
Laptops	44	13.4
Refrigerator	153	46.5

Variables	Frequency (n = 329)	Percentage (%)
Land	125	38.0

*Sales, Marketing, Cashier, Engineering, Teaching and Trading

Table 3
Experience of unintentional injury among respondents

Variables	Frequency(n = 329)	Percentage (%)
Lifetime experience of at least one form of unintentional injury		
Yes	329	100
No	0	0
Lifetime Injury type		
Cuts	207	62.9
Sprains Or Strains	93	28.3
Fractures Or Broken Bones	111	33.7
Burns	91	27.7
Head Or Neck Injuries	102	31
Poisoning Or Overdose	8	2.4
Road Traffic Accident	33	10
Drowning	4	1.2
Sports Related Injury	197	59.9
Fires	8	2.4
Animal Biting	18	5.5

Variables	Frequency(n = 329)	Percentage (%)
Unintentional injury 6 months prior to the study		
Cuts	148	45
Sprains Or Strains	51	15.5
Fractures Or Broken Bones	26	7.9
Burns	18	5.5
Head Or Neck Injuries	3	0.9
Poisoning Or Overdose	0	0
Road Traffic Accident	12	3.6
Drowning	0	0
Sports Related Injury	55	16.7
Fires	0	0
Animal Biting	3	0.9

Table 4
Association between respondents' sociodemographic characteristics and unintentional injury experience

Sociodemograhic determinants	Unintentional Injury Experience		X^2	p-value
	Yes (%)	No (%)		
Age (years)				
≤14	89 (52.4)	80 (50.3)	0.137	0.712
>14	81 (47.6)	79 (49.7)		
Sex				
Male	105 (61.8)	72 (45.3)	8.979	**0.003****
Female	65 (38.2)	87 (54.7)		
Ethnicity				
Yoruba	124 (72.9)	111 (69.8)	6.116	0.106
Igbo	35 (20.6)	42 (26.4)		
Hausa	9 (5.3)	2 (1.3)		
Others*	2 (1.2)	4 (2.5)		
Religion				
Christianity	97 (57.1)	99 (62.3)	0.924	0.336
Islam	73 (42.9)	60 (37.7)		
Educational level	29 (17.1)	75 (48.1)	76.105	**< 0.001****
No Formal education	20 (11.8)	45 (28.8)		
Primary	102 (60.0)	28 (17.9)		
Secondary	19 (11.2)	8 (5.1)		
Tertiary				

*Tiv, Egun, Igala and Edo

Table 5
Bivariate analysis of Respondents' behavioural characteristics and unintentional injury experience

Behavioural information	Unintentional Injury Experience		X^2	p-value
	Yes (%) (%)	No		
Ever drank alcohol				
Yes	64 (37.6)	64 (40.3)	0.234	0.628
No	106 (62.4)	95 (59.7)		
Alcohol consumption last 30 days prior to the study				
Yes	21 (12.7)	8 (5.0)	5.801	**0.016****
No	145 (87.3)	151 (95.0)		
Physical attack				
Yes	68 (40.0)	46 (28.9)	4.446	**0.035****
No	102 (60.0)	113 (71.1)		
Physical Fight				
Yes	101 (59.4)	82 (51.6)	2.046	0.153
No	69 (40.6)	77 (48.4)		
Bullied in the neighbourhood 6 months prior to the study				
Yes	59 (34.7)	33 (20.8)	7.938	**0.005****
No	111 (65.3)	126 (79.2)		
Loneliness	90 (52.9)	57 (35.8)	9.711	**0.002****
Yes	80 (47.1)	102 (64.2)		
No				
Participation in group sports	139 (81.8)	78 (49.1)	39.145	**< 0.001****
Yes	31 (18.2)	81 (50.9)		
No				
Mentor or role model who promotes safety	74 (43.5)	44 (27.7)	8.980	**0.003****
Yes	96 (56.5)	115 (72.3)		
No				
Distracting behaviours				

Behavioural information	Unintentional Injury Experience		X^2	p-value
	Yes (%) (%)	No		
Yes	71 (41.8)	41 (25.8)	9.342	**0.002****
No	99 (58.2)	118 (74.2)		

**Statistically significant

DISCUSSION

This study was conducted to assess the prevalence and determinants of unintentional injuries among out-of-school adolescents in Ojo Local Government Area, Lagos state.

In this study, half of the respondents reported experiencing unintentional injury in the six months prior to the study. The WHO reported that unintentional injuries are among the leading causes of death and disability among adolescents showing that about half of adolescents report having experienced at least one unintentional injury (23). The finding is also similar to a study in Thailand, Philippines, Indonesia and Laos which reported that approximately half of adolescents in Philippines had experienced injury once or more times in the past 12 months (12). In contrast, a study conducted in Liberia by Pengpid reported a higher prevalence of single or multiple serious injuries of among school-going adolescents (24). This shows the high occurrence of unintentional injury among adolescents, albeit the observed difference which is likely due to geographical differences, population age, reporting bias and injury criteria.

This study revealed that slightly above half of the male respondents experienced unintentional injuries compared to females. Research suggests that adolescent boys are more likely to experience unintentional injuries than girls because of engagement in physically risky activities, including street work, sports, and road-related activities (11, 25). These engagements may require adolescents to assist in work-related activities, increasing their exposure to unsafe environments such as busy markets, factories, and streets. Studies have shown that adolescents in such settings are more prone to higher risks of occupational injuries, including cuts, falls, and burns (26, 27). The finding is consistent with a study conducted on the prevalence and factors associated with serious injuries among in-school adolescents in Panama, which reported that injuries occurred more among male adolescents. (25). This may be due to higher level of risk taking behaviours, participation in group sports and other significant determinants among males compared with females (23). However, this is in contrast to a study by Azubuike and Onyemaka among adolescents in an urban Niger delta community of Nigeria which reported little or no significant gender differences was found (22). This variation could be because of the different regions and geographical locations where the studies were conducted. In addition, variation in definition and measurement of unintentional injuries in different environments or regions can influence the observed gender patterns.

In this study, some of the respondents with unintentional injuries reported consuming alcohol 30 days prior to the study. This is consistent with a study conducted by Noh and Jung in Korea among adolescents visiting emergency department which reported that alcohol use is a risk factor for injuries due to impaired behaviours, increased aggression, and reduced motor coordination (28). This finding is also similar with report from previous studies that alcohol use among adolescents is associated with participation in high-risk activities and exposure to injuries (29, 30). The study revealed that adolescents with unintentional injuries often had been attacked and or engaged in physical fight and experiences of bullying within and outside their neighborhoods. Past studies revealed that exposure to violence increases the likelihood of unintentional injuries, either directly through physical fight or indirectly by encouraging risk-taking (27, 31).

In this study, feelings of loneliness and peers influence were common among respondents with unintentional injuries. Loneliness is associated with higher engagement in risky behaviors as a coping mechanism (32). Additionally, adolescents who keep friends who engage in risky behaviors such as substance abuse or reckless activities are more likely to be influenced by peers and then engage in such behaviors, increasing susceptibility to injury (33). In this study, participation in sports and distracting behaviors were also common among those with injuries. This is in accordance with a study that reported that sports provided physical and social importance, they are also a determinant of unintentional injury among adolescents, especially in unregulated or poorly supervised environment (34). Distracting behaviors, such as using mobile phones while walking or crossing roads, have also been identified in prior studies as growing contributors to unintentional injuries (35).

Conclusions

This study assessed the prevalence and determinants of unintentional injuries among out of school adolescents in Ojo Local Government Area, Lagos State. The findings showed that respondents' sex, family structure, family type, and parents' occupation were risk factors of unintentional injuries. Unintentional injuries were also reported among adolescents who had recent alcohol consumption, experienced the following; physical attack, physical fight, bully, loneliness, and involvement in risky activities. There is a need to develop effective prevention strategies, targeted towards adolescents in order to reduce occurrence of unintentional injuries and mitigate their impact on adolescents' health and well-being.

Limitation

Our study has contributed to the body of knowledge focusing on out of school adolescents' unintentional injury experience. However, some limitations were observed. Firstly, unintentional injury was self-reported and it may likely introduce possible bias or underreporting due to social desirability effect. However, we ensured respondents provided accurate information. Secondly, the cross-sectional design used in this study cannot establish causal association between unintentional injuries and the factors

identified. However, the association reported provided insight into the causes of unintentional injury among out-of-school adolescents.

Abbreviations

AOR
Adjusted Odds Ratio
CIs
Confidence Intervals
UI
Unintentional Injuries
SSA
Sub-Saharan Africa

Declarations

Declarations

Ethics approval and consent to participate

This study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval was obtained from Lagos State Health Research Committee Ministry of Health (LSHREC/2024/0034). Assents were obtained from respondents younger than 18 years and informed consents were obtained from the respondents' parents and respondents older than 18 years. The purpose and objectives of the research were explained to the respondents before obtaining consent. Confidentiality of respondents' personal information was maintained.

Clinical Trial Number

Not applicable

Consent for publication

Not applicable

Competing interests

The authors declare no conflict of interest

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Author Contribution

IAA conceptualized the study, MMS and IAA developed the study design. IAA carried out data collection and analysis, MMS interpreted the findings. IAA drafted the initial manuscript, MMS reviewed and revised the manuscript for critical intellectual content.

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Availability of data and material

Data is available upon reasonable request from the authors

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Figures

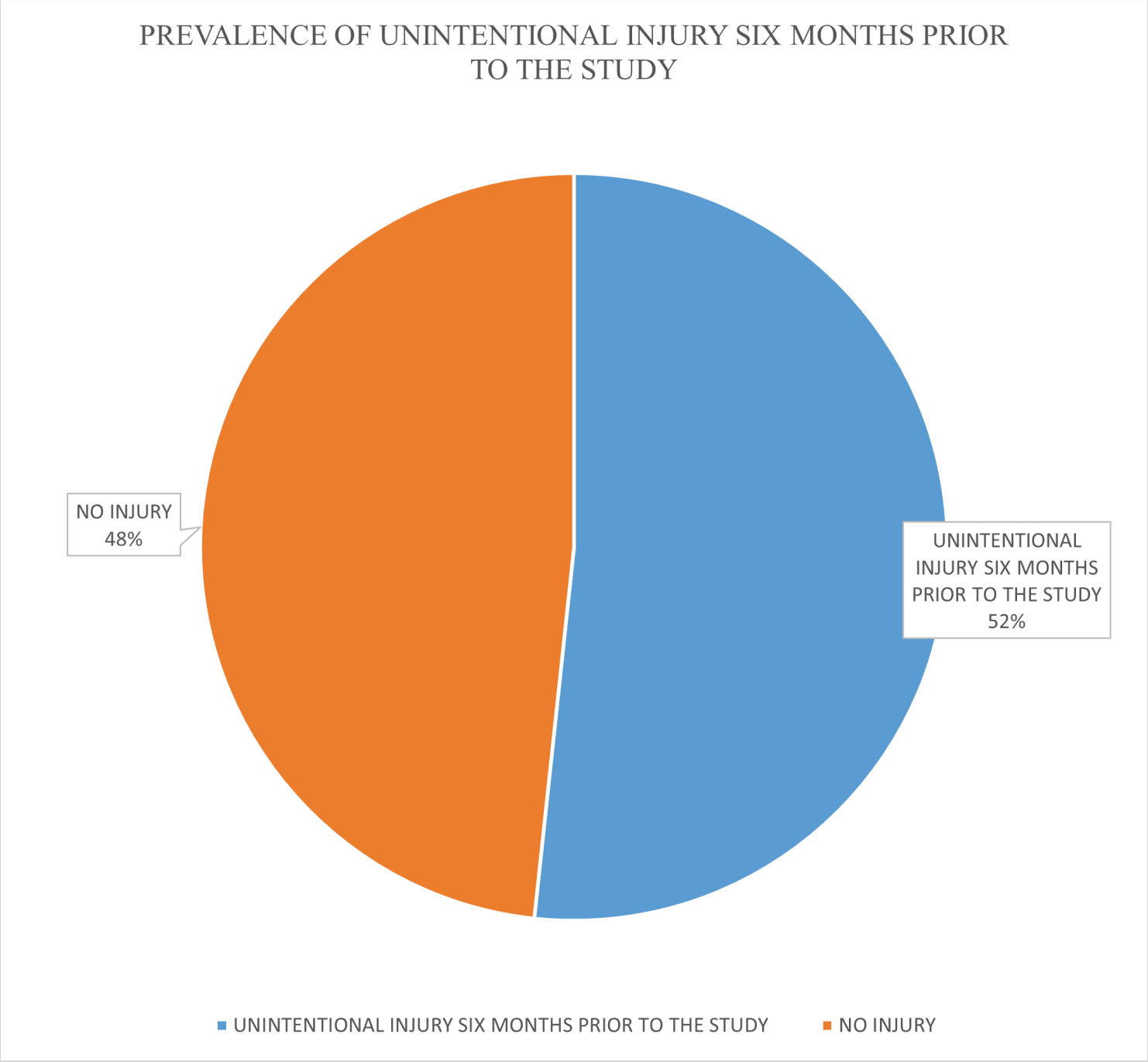


Figure 1

Respondent unintentional injury six months prior to the study