

Attitude and Behaviour of Users of Motorcycle Towards the Use of Crash Helmet in Ado-Ekiti, Nigeria.

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Abstract

Introduction: There is a major and growing public health concern in preventing serious injuries and deaths from motorcycle crashes. The judicious use of motorcycle crash helmet is a proactive approach to preventing head injury among motorcycle users. The objective of this study is to determine the attitude and behaviour of users of motorcycle towards the use of crash helmet in Ado-Ekiti, Nigeria.

Method: This is a cross-sectional study design that made use of quantitative survey method involving data collection and analysis. There were 283 voluntary adults who were randomly recruited within Ado-Ekiti metropolis. A semi-structured questionnaire was administered to participants who also consented to the survey.

Results: There were 283 returned and analyzable questionnaires out of 321. The modal age group was 21-30 years (42%). There were more males, 209 (73.9%). Majority of the respondents were single (55.1%). There were more Students, 92(32.5%), in the study. Two hundred and forty respondents (84.8%) believed that it is necessary to use crash helmet. The frequency of self-reported helmet use was 171(60.4%). Seventy percent of respondents believed that helmet use should be made compulsory. Various reasons for non use of helmet include too heavy 99(35.0%), fear of contracting disease 93(32.9%) and not protective 24(8.5%).

Conclusions: This study highlighted that a far greater number of respondents believed that the use of crash helmet is necessary for safety and should be made compulsory. Nevertheless, the discomfort which is associated with wearing a crash helmet and perceived risk of contracting infection from helmet use were the main negative factors militating against helmet use.

Key words: Attitude, Behaviour, Crash helmet, Head injuries, Motorcycle, Users.

List of Abbreviations

FRSC: Federal Road Safety Commission

PAC: Public Awareness Campaign

RTA: Road Traffic Accident.

MHU: Motorcycle Helmet Use.

WHO: World Health Organisation

Glossary

Attitudes – they are mental habits acquired from social experiences that predispose individuals to react to situations, persons or specific objects in a definite way. An attitude is deemed an enduring system that includes a cognitive component, an emotional (feeling) component and an action tendency (TAU, 2014).

Head injury – this is a damage to any of the structures of the head as a result of trauma. While the term „head injury“ is most often used to refer to an injury to the brain, head injuries may also involve the skin (scalp), skull, muscles, blood vessels, and other organs of the face or head. A head injury does not always mean that there is an associated brain injury (MedicineNet.com, 2014).

Helmet - a motorcycle helmet is a type of protective headgear used by riders of motorcycles and pillion passengers. The essential goal of a crash helmet is motorcycle safety; to offer protection to the rider's

head in an event of accident, thus preventing or reducing head injury or saving the rider's life (Wikipedia, 2010).

Informed consent – this is the principle that guides that participants in a study should be informed about the risks involved in a study; its benefits and purposes also, as they affect their participation before they decide whether or not to be involved, and this planned participation should be entirely voluntary (Green and Thorogood, 2009).

Pilot study – this refers to a mini study which is conducted in preparation for a planned project; essentially to test an aspect of the study design, e.g. in a quantitative study, and to allow necessary adjustment to be made prior to final commitment to the design (AQR, 2011).

Positivism – this refers to epistemological research approach that tends to assume that a stable reality exists which essentially can be known and also understood through empirical methods (Green and Thorogood, 2009).

Questionnaires in surveys – they are widely used tools for obtaining information (data) for analysis during research study.

Social diagnosis – it is made through socio-medical surveys and by researching into domestic and social conditions of individuals (TAU, 2014)

Variables in research – they are basically grouped into two: independent (explanatory) variable and dependent (response or outcome) variable.

Introduction and Background

Motorcycle is used in this part of the world for several reasons which include commercial purposes, private and pleasurable means of easy commuting. It is also a major cause of head injuries following a road traffic accident. Peden et al. (2004) observed that the main risk factor for severe head injury among commercial motorcyclists and their passengers is non-use of crash helmet. Injuries and fatalities resulting from motorcycle accidents are a growing public health problem in developing countries (Sood, 1988). Falope (1991) noted that relatively few developing countries have enacted and are enforcing motorcycle helmet laws.

There is a major and growing public health concern in preventing serious injuries and deaths from motorcycle crashes. It was estimated that motorcycle accidents claimed 4,502 lives in 2010, while motorcycle-related deaths increased by 55% since year 2000 (CDC, 2014). The Centre for Disease Control and Prevention (2014) observed that an estimated 37 per cent of crash deaths among motorcycle riders and 41 per cent of crash death for motorcycle passengers are preventable through the use of crash helmets.

This study seeks to determine the attitudes and behaviour of users of motorcycle towards the use of crash helmet in Ado-Ekiti, Nigeria.

The objectives of this study are:

- 1) To determine the attitude and behaviour of users of motorcycle towards the use of crash helmet in Ado-Ekiti, Nigeria.
- 2) To review Literature on the use of crash helmet and Motorcycle-related accidents in developed and developing countries.

General Considerations

Literature Review

Studies on Motorcycle Accidents and Helmet use

Various literatures have visited general issues relating to road traffic accidents and their untoward impact on life. Other related studies took a deeper course into motorcycle accidents and the use of crash helmet as a preventive measure to reducing severity of head injury. Akinlade (2000) while researching on the knowledge, attitudes, and practices of road safety and first aid among commercial motorcyclists in a district of Oyo State, Nigeria, noted (from the public health point of view) that road traffic accidents have

been recognized as a worrisome health problem in both developing and developed countries. He further submitted that there is an increasing rate of road traffic accidents in developing countries like Nigeria, but a reduction in the developed world. In consonance with the study done by Ogbeide et al. (1994) it was noted that some major causes of road traffic accidents can be attributable to human errors and inabilities, adverse road conditions, poor road signs and mechanical defects of vehicles. Furthermore, the age of the motorcyclist, general medical and mental fitness of the rider, degree of alcoholic consumption and educational level of the motorcyclist, all serve as most important human factors in road traffic accidents (Lin et al., 2003; Sexton et al., 2004; Elliot, Baughan and Sexton, 2007).

Adewale (2009) in his write up observed that wearing an approved, correctly-fitting-standard, crash helmet while riding a motorcycle helps to reduce head or neck injury and also increases a rider's chances of surviving a crash. He also noted that, on the contrary, users of motorcycle do give flimsy excuses for not using crash helmet and prefer using improvised helmets like dried pumpkin shells or empty paint plastic keg to avert disturbance from law enforcement agents. Some excuses that are often heard from users of motorcycles include high risk of contracting infection from helmets and the inconveniences associated with the usage of crash helmets (Salaudeen et al., 2012).

Head injuries; a leading cause of mortality and disability

Head injuries sustained, following a road traffic accident, have been implicated as a major cause of death and disability among users of motorcycles. The World Health Organisation (2006) observed that head injuries result in much higher medical costs when compared with other types of injuries. Importantly, the social costs of head injuries for survivors, their families and communities are very high. This is owing to the fact that they frequently require long term care and specialised medical care during the management of the cases. Moreover, there is a resultant negative impact on the country's health care costs and the general economic situation. WHO (2006) indicated that in some low-income and middle-income countries head injuries are estimated to account for up to 88% of deaths among motorcycle users. In European countries, they contribute around 75% of such fatalities (WHO, 2006). It is known that these mortalities and disabilities can be prevented through judicious use of crash helmet by motorcycle users (Salaudeen et al., 2012). In West African region, there is an upward trend in the number of motorcycle users both for commercial and recreational purposes.

Motorcycle Helmet legislation to increase use in Nigeria

It is known that laws that demand the strict use of crash helmets while riding motorcycle increases their use (Braddock et al., 1992). Consequently, injuries from motorcycle accidents, death and medical costs are reduced. A fewer number of motorcyclists (less than 50%) wear helmets in Nigeria and some other West African countries when they are not compelled by law, while compliance improves dramatically when the laws are in effect and are adequately enforced (Adewale, 2009). In Nigeria, the Federal Road Safety Commission is the body that sees to adherence to road safety laws. Also, the traffic police officers contribute to the enforcement of the crash helmet law in the country. Meanwhile, various laws had been enacted at different times by the Local, State and Federal governments of Nigeria to curb the untoward excesses of motorcycle riders but sustained implementation of the said laws has always been a challenge. Examples of such laws include the National Road Traffic Regulation of 2004 and FRSC Establishment Act 2007.

The Head, its delicate contents and injury

The brain is a very fragile organ which is encased within the skull. Just behind the skull, and adherent to it, is a tough, fibrous membrane called dura mater. There are other coverings of the brain (meninges) which are the arachnoid mater and the pia mater as we approach the brain from the bony skull. The cerebrospinal fluid bathes and cushions the brain and the spinal cord.

In an event of a motorcycle accident without a crash helmet, there could be an open or a closed injury which ultimately can damage the coverings of the brain and the brain, itself. It is worth noting that most traumatic brain injuries are of closed type with a resultant haematoma in most cases. Crash helmet serves

as an additional protective layer to the head and its delicate contents. Motorcycle riders who do not wear a crash helmet run a much higher risk of sustaining head and traumatic brain injuries.

Bringing behaviour change through social marketing

Non-adherence to traffic laws governing crash helmet use is a major factor implicated in head injury resulting from motorcycle accident (Oginni, Ugboko and Adewole, 2007; Ogunmodede et al., 2012). The users of motorcycle do give flimsy excuses for not using crash helmet and prefer using improvised helmets like dried pumpkin shells or empty paint plastic keg to avert disturbance from law enforcement agents (Adewale, 2009). These materials do not prevent traumatic impact to the brain that can result to head injury in cases of accidents. In a drive to bring behaviour change in situations of harmful behaviour, social marketing has been suggested. TAU (2014) described social marketing as the process of motivating people (through application of marketing techniques) to voluntarily adopt behaviour which is beneficial to them. The adoption of beneficial behaviour is considered over potentially harmful ones. This applies to the use of crash helmet by motorcycle riders which serves a huge benefit to them. Meanwhile, it is worth noting that a slogan of the Public Awareness Campaign (PAC) that strives to increase helmet-use rates and improve traffic safety knowledge throughout Vietnam is „Wear A Helmet. There Are No Excuses“. This seeks to decrease traffic accident fatalities and modify road safety behaviour.

Methods

Literature search strategy:

Efforts were geared towards thorough literature search, and the search was conducted in order to identify the following:

- (a) Literature on the use of motorcycle crash helmet and related-accidents in West African sub region.
- (b) Available data on motorcycle accidents in sub-Saharan Africa, especially, West African region
- (c) Literature on attitude, perception and use of crash helmet.

The literature search was done to cover the period, 1980 – 2014, for all related publications in English language.

Electronic searches for information/data bases such as EBSCO, PUBMED, Cochrane library, and also some international organisations, like WHO, were carried out. Searches were done using some key words as seen below (Box 1).

Box 1: Literature search strategy.

“attitude” OR “behaviour” OR “perception” OR “crash helmet use” OR “motorcycle accident” OR “motorcycle riders” OR “commercial motorcycle” OR “head injury” OR “laws of helmet use” OR “enforcement of law” OR “compliance with law” OR “available literatures in motorcycle accident” OR “developing countries” OR “sub-saharan africa” OR “west african region”.

Study Setting

The present study was carried out at randomly selected motorcycle parks and busy locations in Ado-Ekiti metropolis where people commute on daily basis. The subjects were motorcyclists and other users of motorcycle who were randomly selected.

Ethical Clearance

Necessary basic procedure was observed in obtaining ethical clearance. Also, written consent (in form of a „ticked consent“) was obtained from the participants after due explanation of the survey and assurance of anonymity and confidentiality.

Study Design

This was a cross-sectional survey that made use of semi-structured, pre-tested questionnaire which was given to volunteers to complete.

Epistemological Approach

The research was a quantitative study that assumes positivism. It is known that positivism shapes reality to be objective and combines a deductive approach with precise measurement of quantitative data to predict human behaviour (Neuman, 2000).

Inclusion Criteria

Voluntary adults and younger age groups who gave their consent.

Exclusion Criteria

Children who are not independent to commute with motorcycle.
Those with severe mental/psychiatric illness were also excluded.

Sample Size Estimation

The sample size was calculated using the simplified formula by Glenn (1992):

$$n = N/(+Ne^2)$$

Where n = sample size, N = population size, and e = the level of precision required. The estimation assumed accuracies of 95% confidence interval and a 5% significance level. The study required an estimated 321 respondents.

Data Collection

The researcher and trained assistants distributed the questionnaire and collected data within the month of August, 2014. The content of the questionnaire was carefully translated in local language to participants who were unable to read English without altering the meaning of each question.

Results

There were 283 complete and analyzable questionnaires out of 321 questionnaires administered. The modal age group was 21-30 years (Table 1 and Figure 1). There were more males, 209 (73.9%), than females, 74(26.1%), in this study (Figure 2). Majority of the respondents were not married (single). They constitute 55.1% (156 out of 283) of the returned and analyzable questionnaires (Figure 4). This is followed by respondents who were married, 116(41.0%). A total number of 16(5.7%) respondents only had primary education, 126(44.5%) secondary education, 113(39.9%) tertiary, while 28(9.9%) had no formal education (Figure 5). Students, 92(32.5%), were the majority of the respondents, but closely followed by employed 90(31.8%) and not-employed 80(28.3%), while apprentice constitutes 21(7.4%).

Out of the 283 respondents in the study, 240(84.8%) believed that it is necessary to use crash helmet, while 43(15.2%) did not believe that it is necessary. Males in the affirmative constitute 88.0%, while 12.0% had a negative response. On the other hand, 75.7% among the female respondents believed in the necessity of helmet usage but 24.3% declined. The frequency of self-reported helmet use was 171(60.4%) of the entire respondents, while 112(39.6%) had never used helmet. Statistically significant difference in helmet use was obtained between males and females in this study ($p=0.034$).

Meanwhile, the returned questionnaires also revealed that out of the respondents that admitted that they had used crash helmet, 57(33.3%) always use helmet, 75(43.9%) occasionally use helmet and 39(22.8%) rarely use helmet. There was no statistical significance between literacy and the use of helmet and the frequency of usage ($p>0.5$). Various reasons for non use of helmet include too heavy 99(35.0%), fear of contracting disease 93(32.9%), not protective 24(8.5%), and other reasons not included in the options 6.7(23.7%) – see figures 3 and 6. The discomfort which is associated with wearing a crash helmet and perceived risk of contracting infection from helmet usage were the main negative factors militating against helmet usage.

Discussion

It is not uncommon to witness or hear about cases of motorcycle accidents in this part of the world. Majority of these cases involve riders and passengers who were found without crash helmet. Increasingly motorcycle use for commercial purposes has also increased rate of motorcycle accidents in most

developing countries, especially in West African sub region. Notwithstanding, the use of crash helmet remains discouraging. Available reports from low income countries have documented low rate of motorcycle crash helmet use (Nzegwu et al., 2008; Solagberu et al., 2006).

In this present study, majority of respondents (84.8%) agreed that it is necessary to use crash helmet, although about 50.5% always use the safety gadget. Bianco et al. (2005) reported 33% helmet use while studying on adolescents' attitude and behaviour towards motorcycle helmet use in Italy. A similar report, though involving self reported helmet use among pillion passengers in Ilorin (Nigeria), indicated 36.4% helmet usage (Salaudeen et al., 2012). Consequently there appears to be a gradual increase in the acceptance and use of crash helmet. It is worth noting that most educational programme on behaviour change, as regards crash helmet use, focus more on motorcycle riders. This could explain the low level of helmet use among motorcycle passengers as seen in some studies (Corad et al., 1996; Salaudeen et al., 2012; Zhang, 2004). The present research covers both riders and passengers of motorcycle and recorded an increase in the rate of helmet use.

The reasons given by respondents in this study for not wearing crash helmet were predominantly heaviness/discomfort from the safety gadget (35.0%) and fear of contracting diseases (32.9%). In the study which was done by Bianco et al. (2005) it was reported that discomfort from helmet was one of the reasons for not wearing crash helmet. However, the said study found lack of ownership of helmet as a major reason for not wearing helmet. In consideration of this finding, ownership of helmet may be a strong motivating factor for the use of helmet which also tends to reduce the perceived risk of contracting disease. It calls to mind that fear of contracting disease was a predominant reason for non-use of crash helmet in this study.

The model age group in this study was 21-30 years. This is similar to the study done by Oginni, Ugboko and Adewale (2007) who noted a peak age of 25-29 years. In another related research carried out by Ogunmodede et al (2012) in Oyo state, Nigeria, the model age group was 26-30 years and closely followed by 20-25 years. This agrees with the findings that the number of users of motorcycles, including motorcycle-related accidents and injuries, is predominantly high within this age group (Emejulu et al., 2010; Ogunmodede et al., 2012; Oluwadiya et al., 2004).

In consideration of gender, males in the affirmative constitute 88.0%, while 12.0% had a negative response to the necessity of helmet use. On the other hand, 75.7% among the females respondents believed in the necessity of helmet use but 24.3% declined. Hung, Stevenson and Ivers (2006) observed that men are more likely to use a crash helmet than women. On the contrary, Ichikawa, Chadbunchachai and Marui (2003) reported the reverse. Both studies were done outside Nigeria.

Users of motorcycle in Nigeria are aware of the protective effect of crash helmet. About 92% of respondents in this study reported that crash helmet reduces the severity of head injury, Li et al (2008) reported similar finding in China where about 90% of those in the study agreed to the protective effect of helmets against head injuries.

Conclusion

This study highlighted that a far greater number of respondents believed that the use of crash helmet is necessary for safety and should be made compulsory. Nevertheless, the discomfort which is associated with wearing a crash helmet and perceived risk of contracting infection from helmet use were the main negative factors militating against helmet use. Statistically significant difference in helmet use was obtained between males and females in this study ($p=0.034$).

Recommendations

Following the findings in this study, it would be advisable to improve on the available educational interventions that will help to bring about behavioural change (to all users of motorcycles) as regards the use of crash helmet.

Acquiring personal crash helmet for fear of contracting infection should be encouraged by making the gadget affordable and attractive to users.

Provisions should be made by various arms of government to engage the youths in more meaningful occupation, and also create safer means of intra-city transportation for the teaming population.

The present research is not without **limitation**: a more pragmatic approach to this research will give an insight into developing more dynamic and effective educational interventions that would target behaviour modification among users of motorcycle.

Tables And Figures

Table 1: Age group distribution of the study population.

Age group	Frequency	Percentage
<=20	55	19.4
21-30	119	42.0
31-40	70	24.7
41-50	30	10.6
51 and above	9	3.2
Total	283	100.0

Table 2: Distribution of literacy level and the necessity to use crash helmet.

			Do you feel it is necessary to use crash helmet - Q6		Total
			No	Yes	
Present educational status	Primary	Count	3	13	16
		% within Present educational status - Q4	18.8%	81.3%	100.0%
	Secondary	Count	15	111	126
		% within Present educational status - Q4	11.9%	88.1%	100.0%
	Tertiary	Count	19	94	113
		% within Present educational status - Q4	16.8%	83.2%	100.0%
	Others	Count	6	22	28
		% within Present educational status - Q4	21.4%	78.6%	100.0%

Figure 1: Age group distribution of respondents.

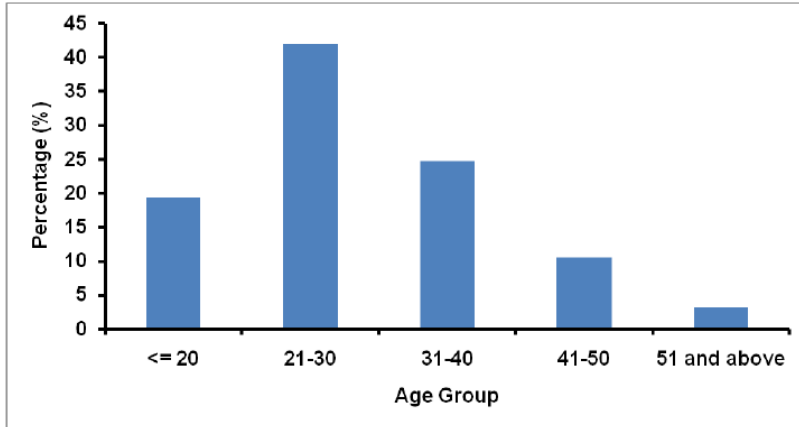


Figure 2: Distribution of sex of the respondents.

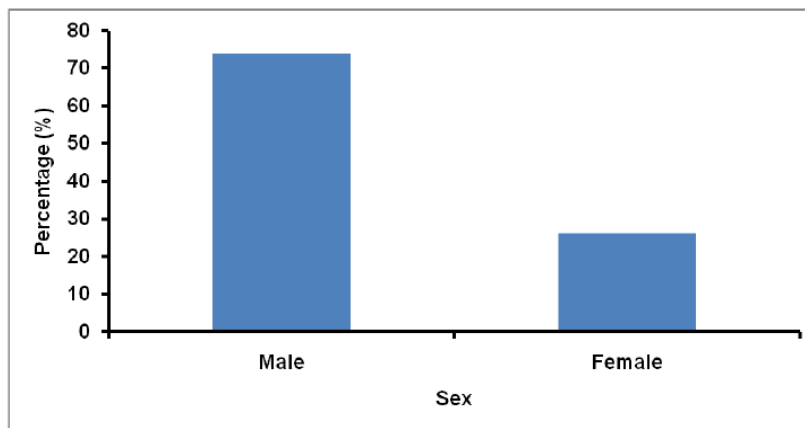


Figure 3: Reasons for not wearing helmet.

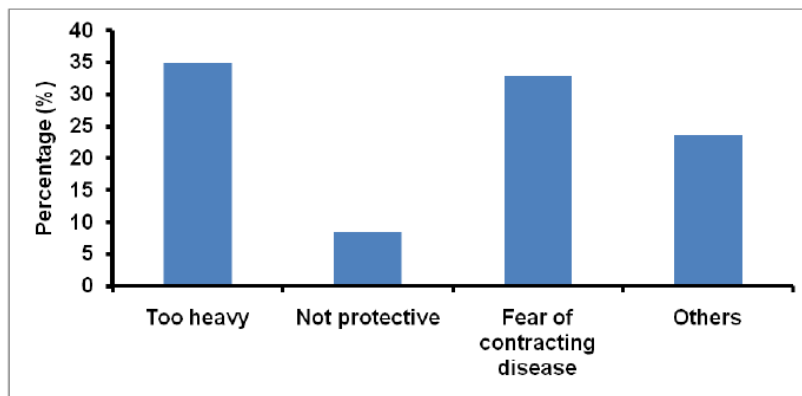


Figure 4: Marital status of the respondents.

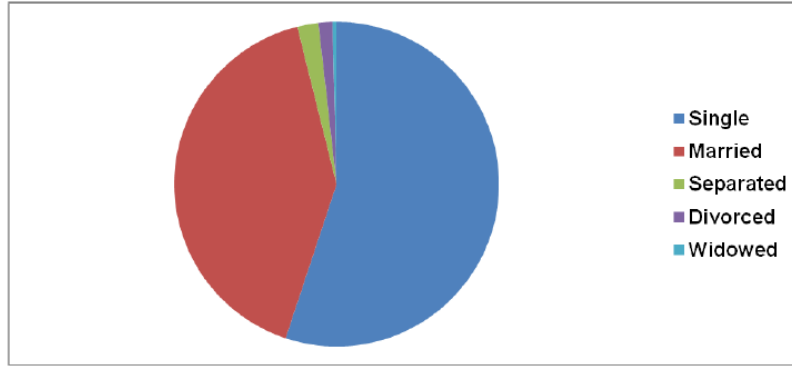


Figure 5: Distribution of literacy of the respondents.

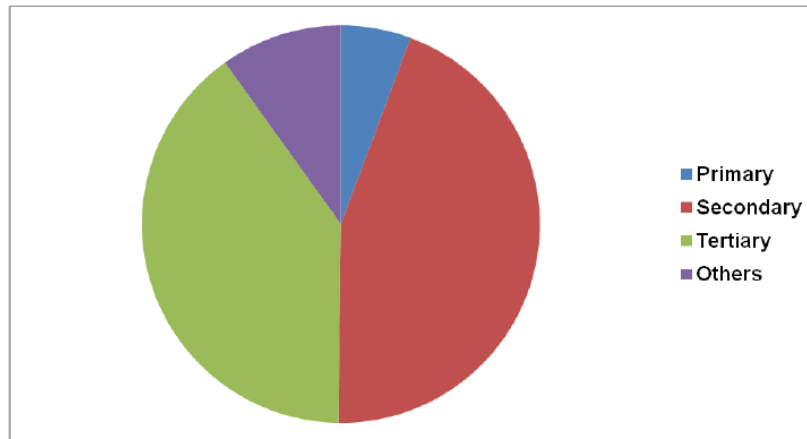
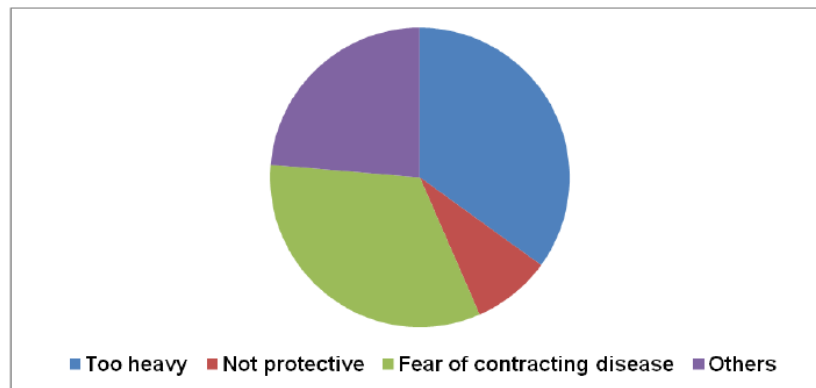


Figure 6: Reasons for not wearing helmet.



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