College of Health Sciences

Department of Public Health

Road Traffic Accident and Associated Factors among Adult Patients who visited the Emergency Department of Jimma University Medical Center, Oromia, South West Ethiopia

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Fiche, Etiophia

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ABSTRACT

Background: Road Traffic accidents (RTAs) are one of the main leading causes of morbidity and mortality throughout the world. According to the report of the statistics of World Health Organization (WHO), RTA take lives of millions of people annually, ranging higher in developing countries, particularly in the Sub- Saharan African region. In Ethiopia, RTA caused losses of thousands of people and high economic damage, and was categorized as one of the top national health burdens. Therefore, this study aimed to assess the magnitude of road traffic injury and associated factors among adult patients who visited the emergency department of Jimma University Medical Center, Southwest Ethiopia, 2024.

Methods: A Facility- based cross-sectional mixed method was conducted among 396 patients who visited the adult emergency department of Jimma University Medical Center from June22 to July 19, 2024. A structured, interviewer-administered questionnaire was used to collect the data. Epi-data version 4.6 was used for data entry and Statistical Package for Social Sciences (SPSS) version 26 was used for data analysis. Variables with p-values ≤ 0.25 in the bivariable analysis were taken to multi-variable logistic regression. On a multi- variable analysis, variables with a P-value ≤ 0.05 were declared as statistically significant factors associated with outcome variable, and then the data was presented using table and diagram.

Result: The magnitude of road traffic accident in the emergency department of Jimma University Medical Center was 69.4% (95% CI: 64.6%, 74.0%). Factors associated with these injuries included experiencing family conflicts (AOR = 3.37, 95% CI: 1.10-10.3), being farmers (AOR = 2.24, 95% CI: 1.07-4.69), use of mobile phones during crossing the road (AOR=5.94; 95% CI: 3.05-11.6), and use of alcohol (AOR = 2.13, 95% CI: 1.06-4.30).

Conclusion and recommendation: The magnitude of road traffic accident in the emergency department of Jimma University Medical Center was high. Factors such as family conflicts, being farmer, alcohol and mobile phone use were linked to these injuries. Local government transportation departments should launch public awareness campaigns on safe driving and accident prevention using different mass media.

Key words: Road traffic accident, Jimma University Medical Center, Ethiopia.

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ACRONYMS

AOR----------Adjusted Odd Ratio

BSc----------Bachelor of Science

CI----------Confidence Interval

DALYs----------Disability Adjusted Life Years

ETB----------Ethiopian Birr

ED----------Emergency Department

HMIS----------Health Management Information System

JUMC----------Jimma University Medical Center

SPSS----------Statistical Package for Social Sciences

SSA----------Sub-Saharan Africa

SGGH----------Shanan Gibe General Hospital

VIF----------Variance Inflation Factor

UN----------United Nations

USD----------United State Dollar

RTA----------Road Traffic Accident

PI----------Principal Investigator

WHO----------World Health Organization

1. INTRODUCTION

1.1. Background

Road Traffic Accident (RTA) is defined as an accident that occurs on a way or street open to public traffic, resulting in one or more persons being killed or injured, and involving at least one moving vehicle (1). RTAs, thus, are collisions involving automobiles, vehicles and pedestrians, vehicles and animals, or vehicles and physical or structural barriers (2).

Road traffic accidents (RTAs) impact people's cognitive, behavioral, emotional, and physical capacities and are a major source of mortality, injury, and long-term physical disability(3) Road traffic injuries (RTIs) are the eighth most common cause of physical impairment, according to the World Health Organization, underscoring the critical need for all-encompassing preventive measures(3).

RTA is one of the major causes of patient admission, which increases global disability-adjusted life years (DALYs) population. The burden of DALYs is also apparent and listed under the top ten leading causes of disease (4).The increased life expectancy in developing nations, along with urbanization and industrialization, is placing significant strain on the transportation network overall, and the road network specifically (5).

Furthermore, compared to developed countries, the main reasons why road traffic accidents result in high rates of fatalities and injuries in developing nations are an increase in the number of motor vehicles, a lack of enforcement of traffic safety laws, inadequate public health infrastructure, and limited access to healthcare (6). It could result in the deaths or serious injuries of one or more people, and at least one moving car is involved (7).

Ethiopia is one of the African countries with the highest rate of traffic fatalities (8). In these regions, rapid urbanization and motorization account for much of the rise and the rise is aggravated due to lack of appropriate road engineering and injury prevention programs (9). The pattern of incidence of road traffic accidents has marked spatial and temporal regularities and the geography of road traffic accidents informs us better about the nature of the problem (10).

1.2. Statement of the problem

Road transport is the most widely used, complex and dangerous because it is highly associated with the rise in road traffic accidents RTA (11).Approximately 1.35 million individuals worldwide lose their lives in traffic-related incidents each year, and an additional 20 to 50 million suffer nonfatal injuries (12).

Globally, 28% of all fatalities occur in South-East Asia, followed by the Western Pacific Region at 25%, Africa at 19%, the Region of the Americas at 12%, the Eastern Mediterranean Region at 11%, and Europe at 5% (5). More than half of all road traffic fatalities worldwide occurred among the productive segments of the population, ages 15 to 44 (13).

WHO report states that 30% of road traffic fatalities are caused by motorcyclists and other powered two- and three-wheeler riders, followed by pedestrians (21%), bicycles (5%), automobile passengers (31%), and other road users (19%) (3).

People in low-income countries continues to have the highest risk of death per population, with almost 90% of injury-related deaths occurring in these nations (14). With 13.4 crashes per 100,000 people in Europe and 32.2/100,000 in Africa, respectively, the rate of traffic accidents in developing countries is more than twice that of wealthy countries (15).

Compared to low-income countries, middle- and high-income countries made more strides in lowering the number of road traffic fatalities. No decrease in the overall number of road traffic fatalities was noted in any low-income nation between 2013 and 2016 (16). In both relative and absolute terms, the issue has not changed during the last 20 years on a worldwide scale (WHO, 2021).

A considerable number of road users are killed by RTA each year in Ethiopia, which is thought to have one of the highest rates in the world (17). Traffic accidents claim the lives of about 2000 persons, with pedestrians accounting for 48% of fatalities, passengers for 45%, and drivers for 7%. Furthermore, Ethiopia spends 400–500 million ETB a year on RTA (17).

In general, automobile accidents constitute an unintentional, preventable, non communicable, and frequent risk to our lives that can occur to nearly anybody, anywhere (18). factors that have been connected to RTAs include: using alcohol, smoking, using illegal drugs, being tired, not knowing the rules, having multiple pillow riders, not having a license, not using personal protective equipment, having a poor road network, police stoppages that happen without warning, illegal vehicle packing, increased urbanization, and slippery floors (19).

Although Ethiopia has a low rate of motorization, the number of fatalities and injuries from traffic accidents has been rising, and the nation has one of the highest accident rates in the world, with one of the greatest losses of life and property annually (20). Road accidents in Ethiopia are a severe issue that needs attention. If real efforts are not made to address the issue, the number of traffic accidents will rise (18).

Implementing effective methods requires a deeper understanding of the elements that affect RTA size, which is closely related to its severity. In general, traffic accidents raise the expense of medical care, but they are highly avoidable with a little more attention paid to individual traffic behavior and road safety. Information, education, and communication about road safety play a vital role in adopting safety measures by the population (21)

Jimma zone has substantial road networking linking the different regions of the country, which is prone to accidents, harming the life and the property of the victims. The number of road traffic accidents is increasing from time to time, and there will be an increase; therefore, it is a serious problem and requires updated studies and evidence.

Therefore, assessing the magnitude of road traffic accidents and identifying risk factors are integral to figure out solutions for these problem. As a result, this study is aimed to assess the magnitude of road traffic accident and its associated factors among patients visited the emergency department of Jimma University Medical Center, 2024.

1.3. Significance of the study

The findings of this study will provide information about the magnitude of RTA and the factors that contribute to them among patients who visited emergency department of health institution. The finding of this study will help in identifying gaps and potential intervention areas with respect to RTAs and associated factors for concerned stakeholders. It may also serve as a baseline for monitoring and revising action plans to address the problem effectively. Therefore, this study is important for stakeholders and policy makers to address the potential problem. Besides, this study was also serving as a baseline for further studies.

2. LITERATURE REVIEW

2.1 Magnitude of Road Traffic Accidents

People's daily lives are directly impacted by road transportation, particularly in big cities where the distance to be covered is too great to be covered in a fair amount of time on foot or by bicycle. RTA is currently emerging as a global public health concern, especially in low- and middle-income nations. The number of road traffic fatalities has decreased marginally to 1.19 million per year, according to the Global Status Report on Road Safety 2023 (3).

According to a community-based cross-sectional survey carried out in northwest Ethiopia, the anticipated number of traffic accidents was 33.6% (19).Road traffic accident rates in Southern Ethiopia were 33.4-62.4%,(22–24). Another study conducted in northeast Ethiopia through a community-based cross-sectional approach found the magnitude of road traffic accidents was 59% (25).A study conducted in central Ethiopia found that the magnitude of road traffic accidents was 54.7% (1).

2.2. Factors associated with Magnitude of Road Traffic Accident

2.2.1. Socio-demographic and economic Factors

In Juba, research revealed that younger age groups are 46% more likely to have a road traffic accident as compared to older age groups (26). A community-based cross-sectional study conducted in northwest Ethiopia found that being younger makes one 49% less likely to have a road traffic accident as compared to older age (19).

A community-based cross-sectional study conducted in Southern Ethiopia revealed that RTA victims were predominantly males, in which the odds of being exposed to a road traffic accident were 20 times higher when compared to females (23). Another study conducted in southern Ethiopia found that being male was associated with a 2 times higher likelihood of acquiring injuries than females (27).Regarding occupation study conducted in northern Ethiopia through an institution-based cross-sectional study, it indicates farmers were 2.9 times more likely to be injured as compared to civil servants (28).Another study conducted in central Ethiopia indicates the correlation between road traffic accidents and occupation, with farmers 3.3 times more likely to be injured as compared to counterparts(18).

A study conducted in southern Ethiopia indicates urban residents are 53% less likely to be injured as compared to rural residents (24). According to the study, which was based on secondary data from the EDHIS 2016, the odds of an accident were 2.5 times higher for urban dwellers than for rural ones (29).

Conflicts with family members are 7.7 times more likely to result in an RTI injury than those without the conflict, according to institutional-based cross-sectional research carried out in central Ethiopia (18).According to research done in central Ethiopia, households with financial difficulties are 9.9 times more likely to sustain injuries in traffic accidents than families without such issues (18). The northern Ethiopian study also showed that lower income levels were associated with a higher risk of injury; patients with lower monthly incomes were 1.89 times more likely to sustain a traffic injury than those with higher incomes (28).

2.2.2 Behavioral Factors

Study conducted in southern Ethiopia showed that those who had substance use were 2.3 times more likely to have road traffic injury as compared to those who did not use the substance (24).another Institutional based cross-sectional study conducted in central Ethiopia showed that those who drank alcohol were 2.91 more likely to have road traffic injury as compared to those who do not use alcohol (30).Another study conducted in northern Ethiopia indicate that Substance user were 2.16 times more likely to present for injury (13).

2.3. Conceptual Frame Work

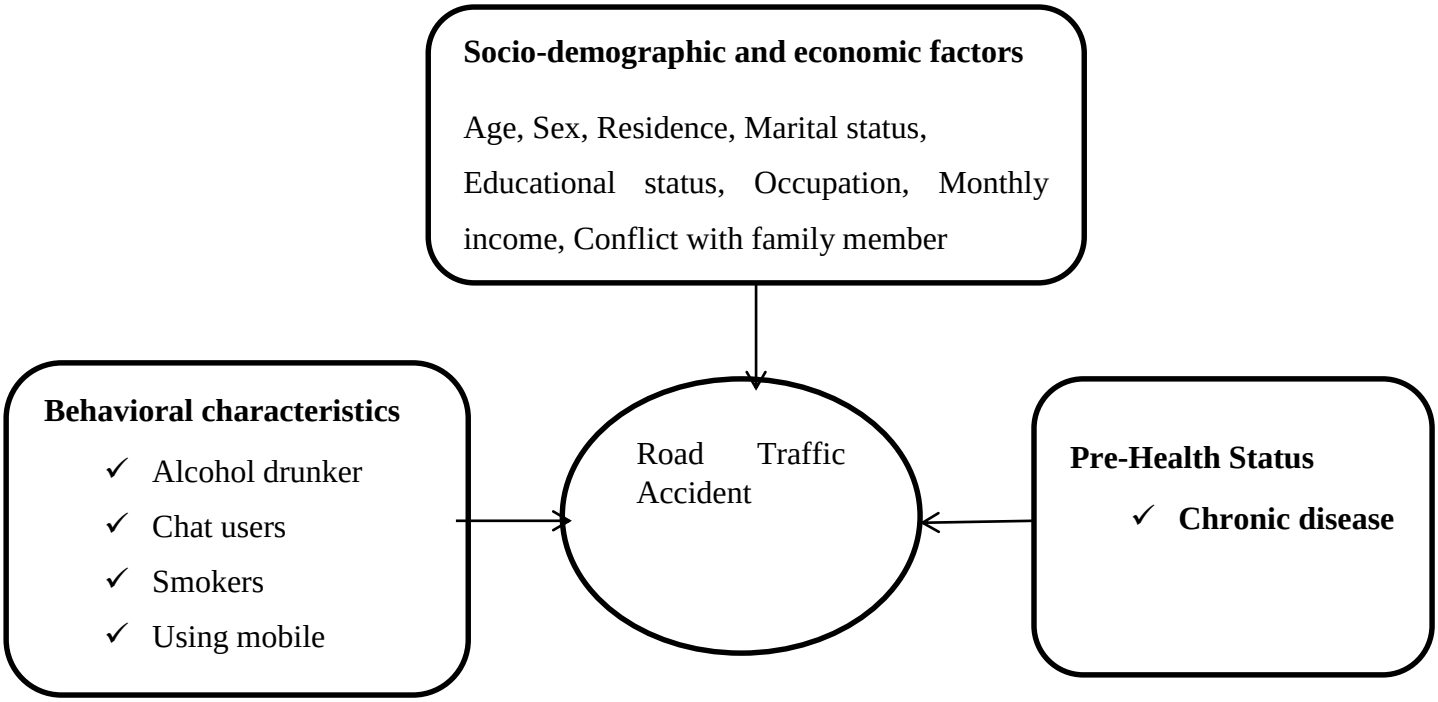

Figure 1: A conceptual framework adapted from different literature that shows the factors that are associated with the magnitude of Road Traffic Accidents(18,31,32)

3. OBJECTIVE

3.1. General Objective

To assess the magnitude of road traffic accident and associated factors among adult patients who visited the emergency department of Jimma university medical center, south west Ethiopia, 2024

3.2. Specific Objectives

- ✓ To determine magnitude of road traffic accident among adult patients who visited the emergency department of Jimma university medical centre, south west Ethiopia, 2024
- ✓ To identify factors associated with road traffic accident among adult patients who visited the emergency department of Jimma university medical centre, south west Ethiopia, 2024
- ✓ To explore barriers of road traffic accident among adult patients who visited the emergency department of Jimma university medical centre, south west Ethiopia, 2024

4. METHODS AND MATERIALS

4.1. Study Area and Period

The study was conducted at the emergency departments of Jimma University Medical Center (JUMC). JUMC is one of the major and only tertiary federal hospitals found in southwest Ethiopia. It is located in Jimma town, Oromia region, and was established in 1930 E.C by Italian invaders for the service of their soldiers. It is about 346 kilometers from Addis Ababa, the capital city of Ethiopia. Currently, JUMC provides services for approximately 18289 inpatients on 800 beds, 232,000 outpatient attendants, 79,000 emergency cases, and 6500 deliveries in a year coming to the hospital from the catchment area. The population in the catchment area is estimated to be around 15–20 millions.

The emergency departments of JUMC have an adult and pediatric wing. The adult emergency department has a total of 70 beds and provides services for an average of 45-50 patients with emergency conditions including accidental cases daily. The department has a total of 63 health professionals with 40 Nurses, 23 Emergency and critical care doctors, 3 are seniors and 20 are residents. The study was conducted from June, 19 to July 22/ 2024, G.C.

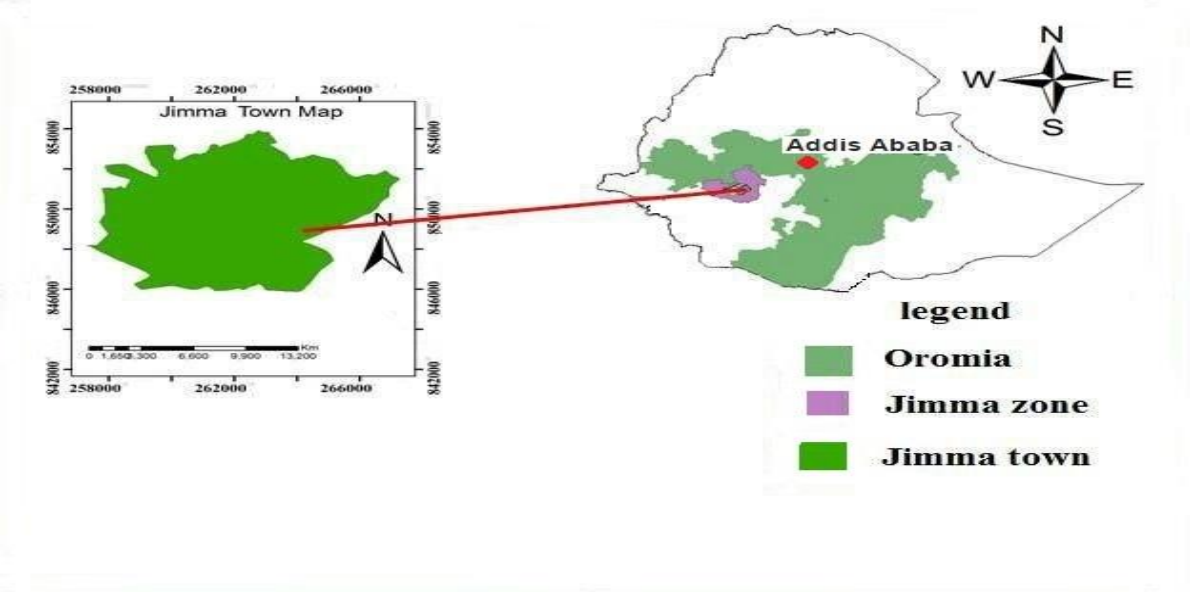

Figure 2: Sketch map that indicates the study area (source: Jimma town administrative office)

4.2. Study design

A facility based cross-sectional study was conducted. Both quantitative and qualitative data was collected. The qualitative finding used to triangulate the quantitative findings.

4.3. Populations

4.3.1 Source Population

For Quantitative: All patients who visited the adult emergency departments of Jimma University Medical Center.

For Qualitative*:* All healthcare professionals working the adult emergency departments of Jimma University Medical Center.

4.3.2. Study Population:

For Quantitative: All accidental injury patients who visited the adult emergency department of Jimma University Medical Center during the study period.

For the qualitative study: In depth interviews was held with all healthcare professionals, who are working at adult emergency departments of Jimma University Medical Center for more than six months, traffic police ,patients and drivers.

4.3.3. Sampled populations

For Quantitative: Randomly selected injured patients presented to the adult emergency department of Jimma University Medical Center during the study period that fulfilled the inclusion criteria.

For qualitative: Purposively selected health care professionals working at the adult emergency departments of Jimma University Medical Center for more than six month, traffic polices ,patient and drivers.

4.4. Eligibility Criteria

4.4.1. Inclusion Criteria

All accident injury patients who presented to the emergency departments of Jimma University Medical Center and able to communicate during the study period was included in the study.

4.4.2. Exclusion Criteria

Those patients having hearing and speaking problems and being severely ill were excluded from the study.

4.5. Sample Size Determination

Sample size Determination for objective one

The sample size for objective one is calculated based on the single population proportion formula by assuming a confidence level of 95%, where Zα/2 of 95% = 1.96, P = 62.5%, and d = 5%. The proportion value was taken from the study conducted in southern Ethiopia (31).

Then, $n = (Z\alpha/2)^2 * \frac{p(1-p)}{d^2}$

n= $(1.96^2) * \frac{0.625(1-0.625)}{(0.05)^2}$ =360

Where:

n= is the maximum possible sample size.

Z α/2=is standard score value for a 95% confidence level for a two-tail normal distribution.

P = population proportion = 62.5%

d = margin of error = 5%

By adding 10% of non-response, the final sample size was = 396

Sample size Determination for objective two

The sample size for associated factors is calculated based on the double population proportion formula using Epi Info version 7.2.6 by assuming a confidence interval of 95% and a power of 80%.

Table 1: Sample size determination for associated factors of road traffic accident

Variables as associated factors	Proportions		COR	Sample size	With 10% non-respondent rate	Reference
	Exposed	Unexposed				
	P1	P2				
.Sex	64.8%	9%	18.6	28	30	(22)
Alcohol use	55.1%	27%	3.1	108	118	(18)
Age of the respondent	33%	56%	0.38	162	178	(24)

The maximum sample size is obtained from the first objectives. Therefore **396** study subjects were considered to conduct the study.

Sample size Determination for qualitative

IDI were conduct with 2 health care worker, 2 traffic police , 2 drivers and 2 injured patients

This IDI were taken randomly because the idea of the professionals is the same, so I took randomly.

4.6. Sampling Procedures

For the quantitative part of the study

A Systematic random sampling technique was used to select the study populations. All patients who are presented to the adult emergency department are registered at the triage center before receiving the service. During this process, we selected the first study subject randomly and the subsequent study subject was selected depending on the interval K.

Depending on the previous patient flow history from the HMIS (Health Management Information System), Within a month 1500 patients are supposed to visit the emergency department and this gives an approximate interval of (K = 3). Incase if the subsequent study subject doesn't fulfill our study criteria, we proceed to next study subject that immediately come after without using the interval and then we continue again depending on the interval (every 3) till we reach the desired sample size.

For the qualitative part of the study

- Participants selected from health care professionals working in adult emergency department- or more than six month,traffic polices,driver and patients
- Purposive sampling technique was applied.

4.7. Data Collection Procedure

For Quantitative

English version questionnaire was used as a data collection instrument. The questionnaire is adapted from different literature translated to a local language, Afaan Oromo and Amharic. The local language version is again retranslated back to English to check consistencies. During data collection, two Nurses BSc holders were involved with one supervisor. The principal investigator was communicated with the supervisor daily on the progress of the work.

For the qualitative part:

Face-to-face, In-depth interviews was used

Interview was conducted by the one health professional and one supervisor

4.8. Study Variables

4.8.1. Dependent variable

Road traffic accident

4.8.2. Independent variables

Socio-demographic and economic factors: Age, sex, Residence, Marital status, Educational status, Occupation, Monthly income, Conflict with family member

Behavioral characteristics: Alcohol drunker, Chat users, Smokers, Using mobile,

Pre-Health Status: Chronic disease

4.9 Operational Definitions

Road: Any public road system, including city streets and state, regional roadways, and local roadway (1)

Traffic-accident: on the road include collisions or crashes involving several cars, pedestrians ,animals, or physical or architectural barriers, as well as crashes that occur on a route or roadway that is accessible to the general public (1).

Passengers: Any occupants of a vehicle other than the driver, including additional passengers and pillion riders (7).

Pedestrians: Individuals who use the sidewalk or streets to push, ride, or walk bicycles (7).

Substance users: Substance users are individuals who use alcohol, chat or cigarette (22).

4.10. Data Quality Assurance

For quantitative: To ensure quality of data, first and foremost, emphasis is given on the data collection instrument. Supervisor crosschecked for completeness and consistency of collected data on a daily basis. Two BSc nurse and supervisor were assigned to collect data. Training was given for data collectors' supervisor for 2 days on issues relating to the instrument, data collection time, exclusion and inclusion criteria, and ethics approval/ consent to participate. A pre-test was conducted at Shanan Gibe General Hospital (SGGH) and Based on the pre-test modification was mode based on the results.

For Qualitative study

- Member check was performed to ensure dependability.
- Peer de-briefing and audit trial was performed to ensure conformability.
- Purposive sampling was employed to ensure transferability

4.11. Data Processing and Analysis

For quantitative part

Data entry was done using Epi- data version 4.6 and data analysis was done using SPSS version 26. The descriptive summary was expressed in frequency, mean, and standard deviation. Binary logistic regression was used to perform the analysis. Multi-collinearity of the independent variables was checked by calculating a variance inflation factor (VIF). A bivariable logistic regression was conducted for each independent variable, and then a multivariable logistic regression was used for those variables with a p-value less than or equal to 0.25 to check the association of independent variables with the dependent variable. The adjusted odds ratio (AOR) with a 95% confidence interval and a p-value of 0.05 was reported. Model fitness was checked by Hosmer and Lemshow test and the p-value was 0.893, shows that the p-value is greater than 0.05, then fails to reject the null hypothesis, and it is stated that the logistic model is good for the data set.

For Qualitative study

For qualitative analysis, firstly, the audio tape data recorded during interview was transcribed word by word by the principal investigator. Secondly, the transcribed data will then be translated from local language to English language by an experienced expert. Then, the verbatim was read and reread to be familiar with the data. Thirdly, it was coded and thematic analysis conducted. Finally, the results presented with the themes developed and triangulated with the quantitative finding.

4.12. Ethical Considerations

Letter of permission and cooperation was taken from the Salale University, Collageof Health science, Ethical review committee (Ref.no: SU-IREBC-140/2016) and it was given to Jimma University Medical Centre. Information on the study was given to the participants, including purposes and procedures, potential risk and benefits, so that, they provide accurate and honest response. It was explained that participation is voluntary and that private information was protected. In order to protect the confidentiality of the information, a name was not being included in interview questions.

4.13. Result Dissemination Plan

The result of the study will be communicated to Salale University, Collageof Health science, Department of public health and to concerned bodies in the study area (Jimma University Medical Center). The finding of this study will be presented in scientific conferences, seminar and workshop as well. Attempt will be made to publish the findings in scientific journals to reach a larger scientific community.

5. RESULTS

5.1: Socio-demographic factors

A total of 389 adult patients with accident injuries were participated in the study out of 396 sample size which made the response rate of 98.2%. The majority participants were age 21-30 years and mean age of the participant was 32.38 years and standard deviation (SD) of 12.45 years of age. The majority were male (77.4%) and most of them come from rural areas (57.3). In terms of marital status, majorities were married (53.7%), educationally, many participants have no formal education (27.2%).Occupation-wise, farmers were the largest group (32.1%), and Monthly income was predominantly low, with 43.7% earning less than 500 ETB. Most patients come from families with fewer than five members (81.5%). whereas conflicts with family members were less common, reported by 10.0% (Table 1).

Table 2: Socio-demographic factors among adult accident injured patients who visited the emergency department of Jimma University Medical Centre, south west Ethiopia, 2024

Variables	**Category**	**Frequency**	**Percentage**
Age	≤20	70	18.0
	21-30`	154	39.6
	31-40	85	21.9
	>40	80	20.6
Sex of the patient	Male	301	77.4
	Female	88	22.6
Place of residence	Urban	166	42.7
	Rural	223	57.3
Marital status	Single	160	41.1
	Married	209	53.7
	Others	20	5.1

Educational status	Uneducated	106	27.2
	Primary school 1-8	119	30.6
	Secondary school 9-12	93	23.9
	Technical school TVET	35	9.0
	Degree and above	36	9.3
Occupational status	Government employee	61	15.7
	Merchant	73	18.8
	Farmers	125	32.1
	Student	72	18.5
	Other	58	14.9
Monthly Income	<500	170	43.7
	500-2500	81	20.8
	2500-5000	39	10.0
	>5000	99	25.4
Conflict with family members	Yes	39	10.0
	No	350	90.0

5.2: Behavioural characteristics

The majority of patients do not drink alcohol (81.7%). Among those who drink, 70.0% consume alcohol less than four times per week, and 92.5% drink fewer than 15 days per month. Chat chewing is reported by 21.3% of patients, with most of these individuals (60.2%) chewing chat four or more times per week. Smoking cigarettes is rare, with only 3.3% of patients smoking, and of these, 69.2% smoke fewer than four times per week. Additionally, 34.2% of patients were used mobile phones during accident time (**Table 2**).

Table 3. Behavioral characteristics adult accidental injured patients who visited the emergency department of Jimma University Medical Center, south west Ethiopia, 2024

Variables	Category	Frequency	Percentage
Drink alcohol	Yes	71	18.3
	No	318	81.7
Drinking per week	<4	28	70.0
	>=4	12	30.0
Number of days per month	<15	37	92.5
	>=15	3	7.5
Chewing chat	Yes	83	21.3
	No	306	78.7
Chewing chat per week	<4	33	39.8
	>=4	50	60.2
Smoking cigarettes	Yes	13	3.3
	No	376	96.7
smoking cigarettes per week	<4	9	69.2
	>=4	4	30.8
Using Mobile phone	Yes	133	34.2
	No	256	65.8

5.3: **Pre-Health status**

A small portion of participants, (21.1%) report having chronic health problems, with hypertension being the most common (41.5%), followed by a history of previous injuries (36.6%), diabetes mellitus (14.6%), and epilepsy (7.2%). with anxiety being the most prevalent disorder (47.0%), followed by stress (33.0%) and depression (20.0%). This indicates that a notable number of patients have pre-existing health and psychological conditions before experiencing accidental injuries (**Table 3**).

Table 4. Pre-Health Status of adult accidental injured patients who visited the emergency department of Jimma University Medical Center, south west Ethiopia, 2024

Variables	Category	Frequency	Percentage
Have any chronic health problems	Yes	82	21.1
	No	307	78.9
Type of chronic disease	Hypertension	34	41.5
	Diabetics mellitus	12	14.6
	Previous history of injury	30	36.6
	Epilepsy	6	7.2

5.4: Magnitude of road traffic accidental injury.

Road traffic accidents (RTA) were the most common cause of injury, accounting for 69.4% of cases. Other causes include fall accidents (8.5%), injuries from fighting (9.8%), and stabbings (6.4%). Less common injuries include burns (3.3%), bullet wounds (1.5%), and machinery-related accidents (1.1%). This data indicates that road traffic accidents are the predominant cause of accidental injuries among the patients in this setting (Figure 3).

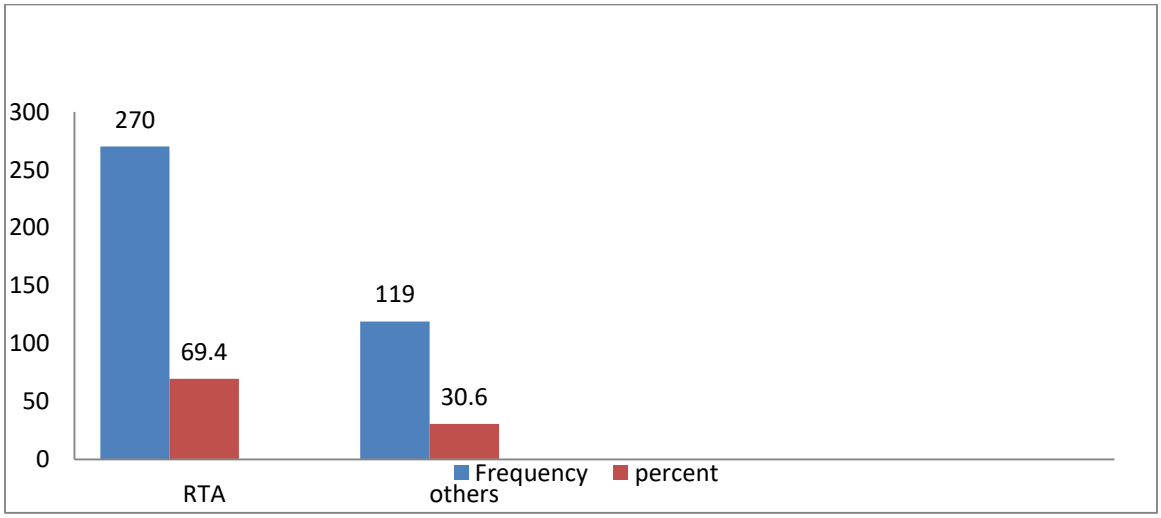

Figure 3: Magnitude of road traffic accident among injured adult patients who visited the emergency department of Jimma University Medical Center, southwest Ethiopia, 2024

5.5: **Distribution of Road Traffic Accidents by Vehicle Type**

Motorcycles were the most common vehicle involved, accounting for nearly half of the accidents (48.1%). Bajaj's (three-wheeled vehicles) also contribute notably to the accident rates, making up 23.3% of the cases, followed by minibuses at 18.1%. In contrast, Sino trucks and Lorries were involved in a smaller proportion of accidents, representing 7.4% and 3% of the cases, respectively **(Figure 4**)

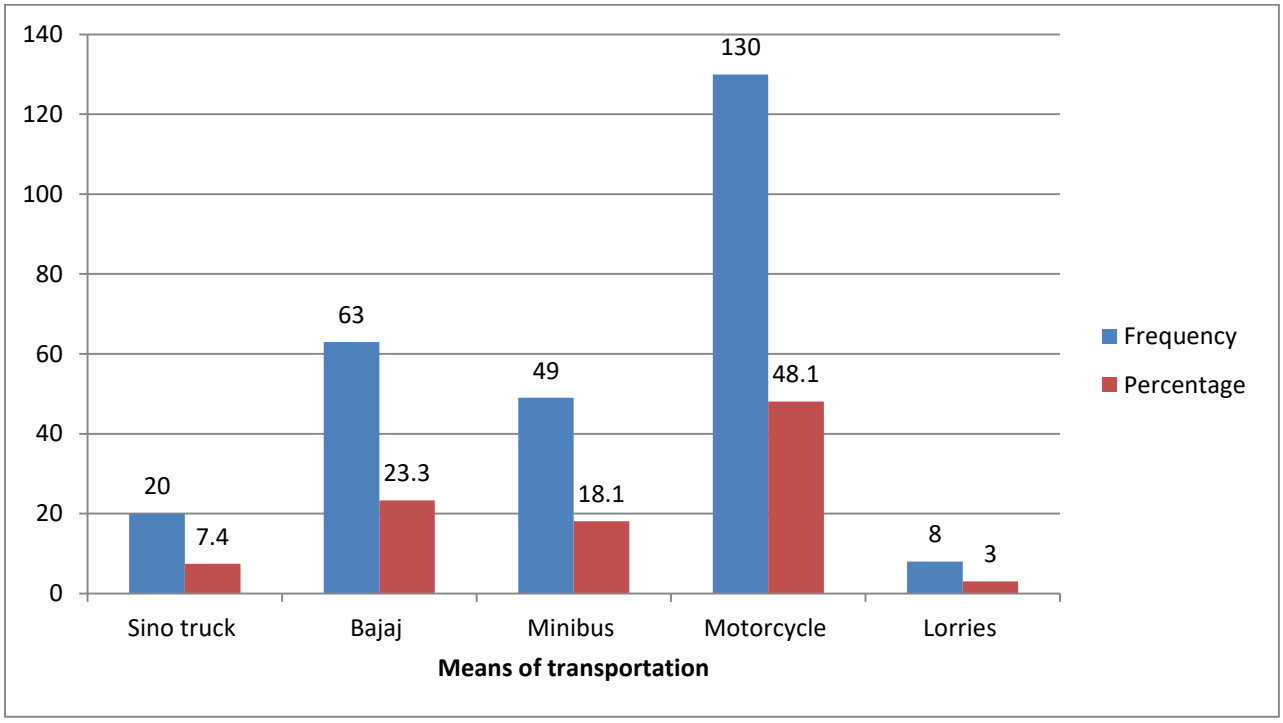

Figure 4: Distribution of Road Traffic Accidents by Vehicle Type among injured adult patients who visited the emergency department of Jimma University Medical Center, south west Ethiopia, 2024

5: Factors associated with road traffic accidental injury

In the bivariate analysis, factors that had p-value < 0.25 were selected as candidate variables for the multivariable analysis. Occupational status, family size, conflict with family members, financial problem, using Mobile phone during accident, drink alcohol, having any chronic health problems, and psychological problem were selected as a candidate variable for multivariable logistic regression model (**Table 5.** in Annex II)

The result of multivariable analysis showed that occupational status, conflict with family members, financial problem, using mobile phone during accident, and drink alcohol at the day of accident were identified as factors associated with road traffic accidental injury among injured adult patients who visited the emergency department of Jimma University Medical Center, Jimma, South west Ethiopia.

Accordingly, farmers are 2.24 times more likely to be involved in a road traffic accident compared to government employees (AOR = 2.24, 95% CI: 1.07-4.69).Additionally, patients who experience family conflicts are 3.37 times more likely to have a road traffic accident compared to those without such conflicts (AOR = 3.37, 95% CI: 1.10-10.3). The use of mobile phones during driving or crossing the road is a particularly strong risk factor, with an AOR of 5.94 (95% CI: 3.05-11.6). Alcohol consumption further compounds this risk, with those who drink being 2.13 times more likely to be involved in accidents (AOR = 2.13, 95% CI: 1.06-4.30) **(Table 5).**

Table 5: Bivariable and multivariable analysis of factors associated with road traffic accident among injured adult patients who visited the emergency department of Jimma University Medical Center, southwest Ethiopia, 2024

Variable	Category	RTA		COR(95%CI)	AOR(95%CI)	p-Value
		Yes	No			
Occupational status	Government employee	35(57.4)	26(42.6)	1	1	
	Merchant	46(63.0)	27(37.0)	1.27(.63,2.54)	1.01(.46,2.21)	.979
	Farmers	99(79.2)	26(20.8)	2.83(1.45,5.51)	2.24(1.07,4.69)	.033*
	Student	49(68.1)	23(31.9)	1.59(.77,3.27)	1.32(.59,2.93)	.496
	Other	41(70.7)	17(29.3)	1.79(.83,3.83)	1.41(.60,3.28)	.426
Conflict with family members	Yes	35(89.7)	4(10.3)	4.29(1.49,12.34)	3.37(1.10,10.3)	.033*
	No	235(67.1)	115(32.9)	1	1	
Drink alcohol	Yes	58(81.7)	13(18.3)	2.24(1.17,4.26)	2.13(1.06,4.30)	.035*
	No	212(66.7)	106(33.3)	1	1	
Using Mobile phone during crossing the road	Yes	121(91.0)	12(9.0)	7.25(3.81,13.78)	5.94(3.05,11.6)	.000*
	No	149(58.2)	107(41.8)	1	1	
Having any chronic health problems	Yes	62(75.6)	20(24.4)	1.48(.845,2.58)	1.43(.73,2.78)	.295
	No	208(67.8)	99(32.2)		1	

**indicates significance at 5% level, COR: Crude odd ratio, AOR: Adjusted odd ratio, 1: reference categories, CI: Confidence interval*

5.6: Qualitative results

The in-depth interviews were conducted with two key informants from the health worker of Jimma University Medical Center, two key informants from patients with road traffic accidents, two of them from traffic police, and two drivers. The interview points majorly addressed those reasons contribute to road traffic accidents (RTAs), including substance use, underage driving, family conflict history, mobile phone use, poor knowledge of driving rules, and environmental factors.

Table for Qualitative part

Key informant participants	**Characteristics of participant**			
	Age	**Sex**	**Education**	**Profession**
Health Professionals	30	F	B.s.c	Nurse
	28	M	B.s.c	Nurse
Traffic polices	32	M	diploma	Polices
	38	F	diploma	Polices
Dirivers	40	M	Secondary scho	Driver
	25	M	Primary school	Driver
Patients	28	M	primary	Merchant
	32	M	Unable to read and wright	Farmer

Reasons for road traffic accidental injury

Theme one: social factors

Family conflict is the cause of road traffic accidents due to heightened emotional distress and reduced cognitive focus, which can affect their awareness and reaction to traffic situations, making them more susceptible to accidents. Participant quoted

"Family conflicts can contribute to emotional distress, distraction, and decreased focus while driving for drivers and pedestrians, which increases the risk of road traffic accidents.Most clients who come with road traffic accidents have a history of family conflict before the injury happened" (By 30years old, female BSc nurse head in JUMC)

Problems with community knowledge were also brought up. The general public is not sufficiently informed about the laws and guidelines pertaining to safe driving. The community rarely cooperates when it comes to identifying drivers who lack discipline.

"Many passengers support the drivers and ask the traffic police to excuse the driver rather than exposing the illegal acts of drivers." (According to a 38-year-old female Jimma town traffic police officer).

"*Very young people obtain licensed even though they are not old enough by increasing their years to give the false impression that they are. These young drivers are frequently observed speeding, even within the town." (By 28 years of male injured participant*

Theme two: Environmental factor

Environmental factors are also a risk for road traffic accidents

Many everyday workers or construction workers frequently go from the countryside to the town in utility vehicles or small trucks that are overloaded as a result of passenger demands.

"Areas prone to accidents are usually intersections, pedestrian crossings, and stretches of road with sharp curves or poor visibility. These locations tend to be more hazardous, especially when weather conditions worsen, further reducing visibility and road traction, which can lead to accident." (By a 28 years old male driver).

"In order to force pedestrians to use the roadways designated for automobiles, the majority of roads are narrow and lack pedestrian walkways. If they do have one, it is usually used for marketing purposes. This occurs when traffic becomes congested, which leads to traffic accidents."(By a 40 years old male driver).

Theme three: behavioral factors

Factors such as substance use and mobile phone use are some of the possible risk factors for road traffic accidents for both drivers and pedestrians.

"*Alcohol increases the likelihood of accidents by impairing judgment, slowing reaction times, and affecting coordination, Causes people who drink alcohol to engage in dangerous behaviors including speeding, making bad decisions, and paying less attention to road conditions, which increases their vulnerability to traffic injuries." (By a male BSc nurse, age 28, who works at JUMC emergency room)*

''There are undciplined drivers who do not regularly put on their seat- belts, do not priority for pedestrians even on zebra crossing (pedestrians - crossing), ***drive drunk and chew chat,*** *driving above speed limit. They only adhere traffic rule when see traffic police, to escape from punishment," (by a 32 years old male patient with road trafficaccident of jimma town)*

"Both drivers and pedestrians frequently contribute to accidents by being distracted. Drivers often talk or text while driving, while pedestrians may cross roads without paying attention, oblivious to approaching vehicles, which contributes to increased accident rates."(By a 32-year-old male traffic police officer of Jimma town).

Suggestions how to overcome the problems

"Public awareness campaigns could be improved through more targeted education, particularly among young drivers. The use of media, schools, and community programs could play a crucial role in changing the behavior of road users. Educating the public about the dangers of alcohol and drug use while driving, as well as the importance of wearing seat belts and helmets, could help reduce accidents significantly" (By 32-years-old male traffic police).

To reduce the severity of road traffic accidents, several measures need to be taken. First, there should be a greater emphasis on educating young drivers about the dangers of substance use, speeding, and reckless driving. Implementing stricter penalties for offenses like driving under the influence, speeding, and failure to use safety equipment could also deter risky behaviors. Moreover, increasing the presence of traffic police on the roads, especially in high-risk areas and during peak traffic times, would help reduce violations. Finally, improved infrastructure, such as better signage, lighting at pedestrian crossings, and well-maintained roads, could further reduce accident rates."(By 30 years old, female BSc nurse head in JUMC).

6. DISCUSSION

The aim of this study was to assess the magnitude of road traffic accident and associated factors among adult patients who visited the emergency department of Jimma university medical Center, south west Ethiopia. This study found that the magnitude of road traffic accident was 69.4% (95% CI: 64.6%, 74.0%). This finding is relatively similar with the study conducted in India 73 % (33), and Ethiopia 54.7-62.5% (24,25,34).

However it is lower than the results of study reported from Saudi Arabia 84.4% (35) and Ethiopia 80% (36).This difference could be due to the study setting, the study time, sample size, emergency service quality and also currently Ethiopia government emphasize and establish different number of strategies implemented to alleviate and reduce RTA-related death.

On the other hand, the finding was higher than a study conducted in Ethiopia 14.1-36.8 (17–19), and Zambia, 25.6% (37). The possible reason for the higher finding might be the difference of study population ,study area possible explanation might be due to JUMC is referral hospital and give high services, the high traffic volume and varying road conditions in these regions could contribute to a greater number of accidents.

Regarding associated factors, the current study showed that farmers were more likely to be involved in a road traffic accident compared to government employees. This result was supported by study done in Ethiopia (18,19,28). This may be less familiar with the traffic patterns and rules of urban environments, leading to difficulties in navigating busy roads. Additionally, the transition from less congested, semi-urban roads to the more complex and faster-paced conditions of urban areas can pose significant challenges (38).

The finding of this study also showed that patients who experience family conflicts were more likely to have a road traffic accident compared to those without such conflicts. The result was in line with the study done in Ethiopia (18).The result was also supported by a study done by Khan and Zaidi, suggest that individuals under high stress or emotional strain, including those affected by family conflicts, are at an increased risk of being involved in accidents as passengers or as pedestrians (39). The possible reason for this is due to heightened emotional distress and reduced cognitive focus, which can affect their awareness and reaction to traffic situations, making them more susceptible to accidents.The qualitative also supported this finding.

For instance, the participant quoted, "*family conflicts can contribute to emotional distress, distraction, and decreased focus while driving, which increases the risk of road traffic accidents*".

Use mobile phone during crossing the road was a particularly strong risk factor in this study. This result was supported by studies shown that mobile phone use while crossing the road can substantially increase the risk of accidents. For instance, study done in Musanz -Rwanda (40), found that pedestrians who use mobile phones are less aware of their surroundings, leading to higher accident rates. This distraction reduces their ability to notice approaching vehicles or traffic signals, increasing the likelihood of being involved in a collision. Additionally, mobile phone use can impair cognitive functions and multitasking abilities (41).The qualitative also supported this finding *"Drivers often talk or text while driving, while pedestrians may cross roads without paying attention……"*

The current also showed that those who drank alcohol were more likely to have road traffic injury as compared to those who do not use alcohol. This result was supported by the study done in Ethiopia (18), and Tirana (42). The possible justification for this result is that alcohol consumptions, leading to slower reaction times, poor judgment, and decreased coordination. This impairment significantly increases the likelihood of road traffic injuries, as alcohol reduces the ability to respond effectively to hazards and heightens risky behaviours, whether in drivers or pedestrians. The qualitative also supported this finding "*Alcohol increases the likelihood of accidents by impairing judgment, slowing reaction times, and affecting coordination……."*

6.1 Strength and limitation of the study

The cross-sectional nature of the study could be limitation as it is difficult to determine the temporal relation betweenthe cause and effect. Social desirability bias could be a limitation to this, to minimize such bias; we used strategies such as reassured the study.

7. CONCLUSION AND RECOMMENDATION

7.1 Conclusion

The magnitude of road traffic accident among injured patients at emergency department of Jimma University Medical Center was 69.4%. Farmers, individuals experiencing family conflicts, and those who drink alcohol were at a higher risk of being involved in road traffic accidents. Additionally, using a mobile phone during crossing road significantly increases the likelihood of injury.

7.2: Recommendation

Zonal and town health office

- Collaborate with local NGOs and community organizations to spearhead educational initiatives and outreach programs to inform the public about road safety and accident prevention.

Zonal's and Woreda's administrators

- Launch campaigns to raise awareness about the dangers of using mobile phones during driving or crossing the road.
- Implement safety training and regulations specifically for farmers and other high-risk occupational groups to improve road safety practices.

Local traffic police and transport departments

- Work in co-operative ways to enforce vehicle safety standards and conduct regular inspections to ensure compliance.
- Collaborate with other stake holders to enforce traffic laws, enhance road conditions, and conduct public awareness campaigns about safe driving practices.

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ANNEX I: CONSENT FORM

Information Sheet and Informed Voluntary Consent Form for the Study Participants

Hello! How are you? My name is _____. I am here on the behalf of investigators as a data collector for the study being conducted in Jimma University Medical Center by Abonesh Belay who is studying for her Master's degree at Salale university, college of Health Sciences. I kindly request you to lend me your attention to explain you about the study and being selected as the study participant.

- Abonesh Belay
- Email:aboneshbelay21@gmail.com
- Mobile phone:0917942987

1. The Study/Project Title.

Magnitude of Road Traffic Accidental Injury and Associated factors among Patients who visited the Emergency Department of Jimma University Medical Center, Jimma Zone, Oromia Region, Southwest Ethiopia.

2. Purpose/Aim of the Study

The findings of this research will serve as an important data to plan appropriate interventions towards to Magnitude of road traffic accident and its associated factors. Moreover, the aim of this study is to write a thesis as a partial requirement for the fulfillments of a Master's Degree Program in General Master of Public Health for the principal investigator.

3. Procedure and Duration

I will be interviewing you using a primary data & questionnaire to provide me with pertinent data that is helpful for the study.

4. Risks and Benefits

There is no any risk of being participating in this study, there would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local policy makers and planners.

5. Confidentiality

The information you will provide us will be confidential. There will be no information that will identify you in particular. The findings of the study will be general for the study population and will not reflect anything particular of individual persons. The questionnaire will be coded to exclude showing personal identifiers. No reference will be made in oral or written reports that could link you to the research.

6. Rights

Participation for this study is fully voluntary. You have the right to declare to participate or not in this study. If you decide to participate, you have the right to withdraw from the study at any time and this will not label you for any loss of benefits which you otherwise are entitled. You do not have to answer any question that you do not want to answer.

Having this information, are you willing to participate in the study?

Agree ☐ Disagree ☐

ANNEX II: ENGLISH VERSION QUESTIONNAIRE

Participant: Code_____

Date of interview____/_____/

Result of interview: 1. Completed 2.Not complete 3.Refused

Checked by Supervisor:

Name:_signature_____Date__/_____/_____

Assessment tool that are adapted from different literatures to collect information on the magnitude of road traffic accident injury among patients visited the emergency department of JUMC.

Part One: Socio-demographic characteristics of the patient

No	Question	Possible Response	Skip
101	Age of the patient	----------	
102	Sex of the patient	1.Male 2.Female	
103	Where is the place of residence of the patient	1.Urban 2.Rural	
104	Marital status of thepatient?	1. Single 4. Widowed 2.Married 3. Divorced 5. Others	
105	What was the educationalstatus of the patient?	1. unable to read and write 2.Can read and write 3. Primary school (1-8) 4.Secondary school (9-12) 5. Technical School (TVET) 6.Degree and above	

106	What was the occupation of the patient?	1.Government Employe 2.Farmer 3.Merchant	4 .student 5.others	
107	Monthly income of the Patient			
108	The number of families living in one house	_____		
109	Do you have any conflict with family member during injury?	Yes No		

B. Behavioral characteristics			
201	Do you take/drink alcohol?	Yes No	If no Skip to Q202
202	If Question 201 is yes, how Often?	_____Days/week _____Days/month other__	
203	Do you chewing chat?	1. Yes2.No	If no Skip to Q206
204	If Yes when do you chewchat?	1.Before starting working 2.while working 3.on lunchtime 4.off time 5.other_____	

205	How often do you chew chat?	1._____Days/week 2._____Days/month 3. other _____	
206	Do you Smoke cigarettes within the last 12 months and still currently?	1.Yes 2.No	If No Skip 301
207	If yes, how Often?	1._____Days/week 2._____Days/month 3. other _____	
208	If Yes how many times per Smoking date?	_____per day	
209	How many Cigarettes do you Smoke per smoking time?	_____	
C- Pre--Health status of the patient			
301	Does have any chronic health problems before coming to the Emergency department?	1.Yes 2.No	If no Skip Q303
302	If question number 301 is yes which type of health problem have you?	1 Hypertension 4.Epilepsy 2. Dm 5.Others 3.Previous history of injury	
D. Injury profile of the patient who visits the emergency department			
303	How did the injury occur?	1. RTA 5. Stub 2.Fall accident 6.Machinery 3.Burn 7.Fighting 4. Bullet 8.other	If not RTA, skip Q305

304	If your answer is road traffic accident in question number 303, Types of vehicle	1. Sinotruck 4. Motor cycle 2. Bajaj 5. Lorries 3. Minibus 6. Others, specify-----	
305	What was the injured person doing during the accident?	1. crossing the road 5.Home 2. walking on the road side 6.school 3. Passenger in a vehicle 7.others 4 .Driving	
401	Did you use mobile phone?	1.Yes 2.No	
402	When was the time of injury?	1. Morning 2. Day 3. Night	
403	From where does the patient Come to emergency department?	1.From the work place 2 .From health center 3.From private health institution 4.accidetal area 5. Others (specify) ……	

In-depth Interview Questions for Qualitative part

Date …….. Age ……..Sex ……..

Occupation ……

1 . Do you think road traffic accident are major problem? **…….**

2. What factors do you think facilitate the occurrence of road traffic accidents?

3. Who do you think should be responsible for traffic accident? ……

4. Are there any problems on implementing traffic safety measures? …….

5. What measures do you take to reduce traffic accidents? ……..

6. What are your recommendations and opinions on strategies of reducing the road traffic accident?

7. What do you think are the biggest challenges to road safety in your area?

ANNEX III: TRANSLETED QUESTIONARY

አባሪ I፡ የመረጃ ሉህ እና በመረጃ የተደገፈ የፍቃደኝነት ስምምነት ቅጽ ለጥናቱ ተሳታፊዎች

ሀሎ! ስላም? የኔ ስም _____. በጅማ ዩኒቨርሲቲ ህክምና ማዕከል በአቦነሽ በላይ በሰላሌ ዩኒቨርሲቲ የጤና ሳይንስ ኢንስቲትዩት የማስተርስ ዲግሪ እየተማረች ላለው ጥናት በመርማሪዎች ስም መረጃ ሰብሳቢ ሆኛለሁ። ስለ ጥናቱ እና የጥናት ተካፋይ ሆኖ መመረጥዎን ለማስረዳት ትኩረትዎን እንዲሰጡኝ በአክብሮት እጠይቃለሁ።

1. የጥናቱ / የፕሮጀክት ርዕስ.

በኦሮሚያ ክልል በጅማ ዞን በደቡብ ምዕራብ ኢትዮጵያ የጅማ ዩኒቨርሲቲ ህክምና ማዕከል ድንገተኛ ክፍልን የጎበኙ ታማሚዎች የመንገድ ትራፊክ አደጋ መጠን እና ተያያዥ ምክንያቶች

2. የጥናቱ ዓላማ/ዓላማ

የዚህ ጥናት ግኝቶች የመንገድ ትራፊክ አደጋን መጠን እና ተያያዥ ምክንያቶችን በተመለከተ ተገቢውን ጣልቃገብነት ለማቀድ እንደ አስፈላጊ መረጃ ሆኖ ያገለግላል። ከዚህም በላይ የዚህ ጥናት ዓላማ ለዋና መርማሪ በአጠቃላይ ማስተር ኦፍ ፐብሊክ ጤና ማስተር ማስተርስ ድግሪ ፕሮግራምን ለማሟላት እንደ ከፊል መስፈርት ሆኖ ተሲስ መጻፍ ነው።

3. የአሰራር ሂደት እና የቆይታ ጊዜ

ለጥናቱ አጋዥ የሆነ አግባብነት ያለው መረጃ ለእኔ ለመስጠት ዋና ዳታ እና መጠይቅን በመጠቀም ቃለ መጠይቅ አደርግልዎታለሁ።

4. አደጋዎች እና ጥቅሞች

በዚህ ጥናት ውስጥ የመሳተፍ ምንም አይነት ስጋት የለም, በዚህ ጥናት ውስጥ ለመሳተፍ ምንም አይነት ቀጥተኛ ክፍያ አይኖርም. ነገር ግን የዚህ ጥናት ግኝቶች ለአካባቢው ፖሊሲ አውጪዎች እና እቅድ አውጪዎች ጠቃሚ መረጃን ሊያሳዩ ይችላሉ

5. ምስጢራዊነት

የምታቀርቡልን መረጃ ሚስጥራዊ ይሆናል። በተለይ እርስዎን የሚለይ መረጃ አይኖርም። የጥናቱ ግኝቶች ለጥናቱ ሕዝብ አጠቃላይ ይሆናል እናም የግለሰቦችን የተለየ ነገር አያንፀባርቅም። መጠይቁ የግል መለያዎችን ከማሳየት ለማስቀረት ኮድ ይደረጋል። እርስዎን ከጥናቱ ጋር ሊያገናኙዎት በሚችሉ የቃል ወይም የጽሁፍ ዘገባዎች ምንም ማጣቀሻ አይደረግም።

6. መብቶች

የዚህ ጥናት ተሳትፎ ሙሉ በሙሉ በፈቃደኝነት ነው. በዚህ ጥናት ለመሳተፍም ሆነ ላለመሳተፍ የማወጅ መብት አልዎት። ለመሳተፍ ከወሰኑ, በማንኛውም ጊዜ ከጥናቱ የመውጣት መብት አለዎት እና ይህ እርስዎ ያለዎትን ጥቅማጥቅሞች ማጣት ላይ ምልክት አያደርግልዎትም. መመለስ የማትፈልገውን ማንኛውንም ጥያቄ መመለስ የለብህም።

ይህ መረጃ ካለህ በጥናቱ ለመሳተፍ ፈቃደኛ ነህ?

እስማማለሁ ☐ አልስማማም። ☐

አባሪ II፡ የእንግሊዘኛ ትርጉም መጠይቅ ለቁጥር ክፍል

ሠንጠረዥ 4፡- በታካሚዎች ላይ የሚደርሰውን የመንገድ ትራፊክ ድንገተኛ ጉዳት መጠን መረጃ ለመሰብሰብ ከተለያዩ ስነ-ፅሁፎች የተቀናጀ የመገምገሚያ መሳሪያ የጅማ ዩኒቨርሲቲ ህክምና ማዕከልን ድንገተኛ ክፍል ጎበኘ።

ቁጥር	ጥያቄ	ምላሽ ሊሆን የሚችል	ዝለል
ክፍል አንድ: የታካሚው ማህበራዊ-ስነ-ሕዝብ ባህሪያት			
101	የታካሚው እድሜ	_____	
102	የታካሚው ጾታ	1.ወንድ 2.ሴት	
103	የት ቦታ ነው የታካሚው መኖሪያ	1.ከተማ 2.ገጠር	
104	የታካሚው የጋብቻ ሁኔታ?	1.ያላገባ 4. መበለት 2.ባለትዳር 3.የተፋታ	
105	የታካሚው የትምህርት ሁኔታ ምን ነበር?	1. ማንበብ እና መጻፍ አልቻለም 2.ማንበብ እና መጻፍ ይችላል 3.የመጀመሪያ ደረጃ ትምህርት ቤት (1-8) 4.ሁለተኛ ደረጃ ትምህርት ቤት (9-12) 5.የቴክኒክ ትምህርት ቤት (TVET) 6.ዲግሪ እና ከዚያ በላይ	

106	የታካሚው ሥራ ምን ነበር?	1.የመንግስት ሰራተኛ 2.ገበሬ 3. ነጋዴ	4. ሹፌር 5. ተማሪ 6. ሌላ	
107	ወርሃዊ የታካሚዉ ገቢ	…….		
108	የቤተሰብ ብዛት በአንድ ቤት ውስጥ የሚኖር	……		
109	ጉዳት በሚደርስበት ጊዜ ከቤተሰብ አባል ጋር ምንም አይነት ግጭት አለ?	1.አዎ 2.የለም		
ለ. የባህርይ ባህሪያት				
201	አልኮል ትወስዳለህ/ ትጠጣለህ?	1.አዎ 2.የለም		ከሌለወደ ጥያቄ203 ዝለል
202	ጥያቄ 20 አዎ ከሆነ ምን ያህል ጊዜ?	1.----------ቀናት/ሳምንት 2.----------ቀናት/ወር 3.ሌላ ----------		
203	ጫት ታኝካለህ?	1.አዎ 2.የለም		ከሌለወደ ጥያቄ206 ዝለል
205	ምን ያህል ጊዜ ኻትን ታኝካለህ።	1.----------ቀናት/ሳምንት 2.---------ቀናት/ወር 3.ሌላ----------		

206	ባለፉት 12 ወራት ውስጥ ሲጋራ ታጨሱ እና አሁንም?	1.አዎ 2.የለም	ከሌለወደ ጥያቄ301 ዝለል
207	አዎ ከነ ፣ ምን ያህል ጊዜ?	1._____ቀን/ሳምንት 2._____ቀን/ወር 3. ሌላ _____	
208	አዎ ከሆነ በአንድ ስንት ጊዜ ማጨስ ቀን?	_____ በቀን	
209	ስንት ሲጋራዎች ያደርጉዎታል ማጨስ በአንድ ማጨስ ጊዜ?	_____	
ሐ- የታካሚው የ ቅድመ ጤና ሁኔታ			
301	ይህ በሽተኛ ወደ ድንገተኛ ክፍል ከመምጣቱ በፊት ምንም አይነት ሥር የሰደደ የጤና ችግር አለበት?	1.አዎ 2.የለም	ከሌለወደ ጥያቄ303 ዝለል
302	የጥያቄ ቁጥር 210 አዎ ከሆነ የትኛው አይነት የጤና ችግር አለህ?	1.የደም ግፊት 2.ዲኤም 3.የቀድሞ የጉዳት ታሪክ 4.የሚጥል በሽታ 5.ሌላ ----------	
401	በጥያቄ ቁጥር 401 አዎ ከሆነ፣ እንዴት ተጎዳህ? ወይስ ጉዳቱ እንዴት ደረሰ?	1) የተሽከርካሪ አደጋ 5.ጩቤ 2) የመውደቅ አደጋ 6) ማሽነሪ 3) ማቃጠል 7) መዋ 4. ጥይት 8) ሌላ---------	ከሌለወደ ጥያቄ 403 ዝለል

402	መልስዎ በጥያቄ ቁጥር 402 ውስጥ የተሸከርካሪ አደጋ ከሆነ, የተሸከርካሪ ዓይነቶች	1. ሲኖትራክ 4. የሞተር ሳይክል 2. ባጃጅ 5. ሎሪስ 3. ሚኒባስ 6. ሌሎች፣ ይግለጹ----------	
403	በአደጋው ወቅት የተጎዳው ሰው ምን እያደረገ ነበር?	1. መንገዱን መሻገር 4.መንዳት 2. በመንገድ ዳር መራመድ 5.ቤት 3. በተሸከርካሪ ውስጥ ተሳፋሪ 6.ትምህርት ቤት 7.ሌሎች	
404	የሞባይል ስልክ አጠቃቀምን ተጠቅመዋል።	1.አዎ 2.የለም	
405	የጉዳት ጊዜ መቼ ነበር?	1.ጠዋት 3ሌሊት 2.ቀን	
406	በሽተኛው ከየት ነው ወደ ድንገተኛ ክፍል የሚመጣው?	1.ከሥራው ቦታ 3. .ከግል ጤና ተቋም 2.ከጤና ጣቢያ 4. ክስተት አካባቢ 5. ሌላ (ይግለጹ	

ጥልቅ የቃለ መጠይቅ ጥያቄዎች ለጥራት ክፍል

ቀን ……. ዕድሜ ……. ፆታ …….

ሙያ …….

1. የመንገድ ትራፊክ አደጋ ዋና ችግር ነው ብለው ያስባሉ? ……

2. የመንገድ ትራፊክ አደጋ መከሰትን የሚያመቻቹ ነገሮች ምን ይመስላችኋል?

3. ለትራፊክ አደጋ ተጠያቂው ማን ነው ብለው ያስባሉ?

4. የትራፊክ ደህንነት እርምጃዎችን በመተግበር ላይ ችግሮች አሉ?

5. የትራፊክ አደጋን ለመቀነስ ምን እርምጃዎችን ትወስዳለህ?

6. የመንገድ ትራፊክ አደጋን በመቀነስ ስትራቴጂዎች ላይ የእርስዎ ምክሮች እና አስተያየቶች ምንድ ናቸው?

7. በአካባቢዎ የመንገድ ደህንነት ላይ ትልቁ ፈተናዎች ምንድናቸው ብለው ያስባሉ?

Dabalata I: Waraqaa Odeeffannoo fi Unka Hayyama Tola Ooltummaa Odeeffannoo Hirmaattota Qorannichaaf

Akkam jirta? Maqaan koo _____. Qorannoo Giddugala Meedikaalaa Yunivarsiitii Jimmaa keessatti gaggeeffamaa jiruuf qorattoota bakka bu'ee as jira. Waa'ee qorannichaa fi hirmaataa qorannichaa ta'ee filatamuu kee akka siif ibsuuf xiyyeeffannoo keessan akka naaf liqeessitan kabajaan isin gaafadha**.**

1. Mata Duree Qo'annoo/Pirojektii.

Guddina Miidhaa Balaa Tiraafikaa Daandii fi Qabxiilee Walqabatan Dhukkubsattoota Kutaa Balaa Tasaa Giddugala Yaalaa Yuunivarsiitii Jimmaa, Zoonii Jimmaa, Naannoo Oromiyaa, Kibba Lixa Itoophiyaa daawwatan biratti.

2. Kaayyoo/Kaayyoo Qorannichaa

Argannoon qorannoo kanaa gara guddinaa balaa tiraafikaa daandii fi wantoota kanaan walqabatan irratti giddu-galeessa sirrii ta'e karoorsuu fakka daataa barbaachisaa ta'etti ni tajaajila. Kana malees, kaayyoon qorannoo kanaa qorataa muummichaaf Sagantaa Digirii Maastarsii Mastersii Waliigalaa Fayyaa Hawaasaa Waliigalaa (General Master of Public Health) galmaan ga'uuf akka barbaachisummaa gartokkeetti barruu qorannoo (thesis) barreessuudha.

3. Hojimaataa fi Turtii

Daataa barbaachisaa ta'ee fi qorannichaaf gargaaru naaf kennuudhaaf daataa jalqabaa & gaaffilee fayyadamuun gaaffii fi deebii isiniif nan taasisa

4. Balaa fi Faayidaa

Qorannoon kana irratti hirmaachuudhaaf balaan tokkollee hin jiru, qorannoo kana irratti hirmaachuuf kaffaltiin kallattiin hin jiraatu ture. Garuu argannoon qorannoo kanarraa argamu namoota imaammata baasan fi karoorfattoota biyya keessaatiif odeeffannoo barbaachisaa ta'e mul'isuu danda'a.

5. Iccitii eeguu

Odeeffannoon isin nuuf kennitan iccitii ta'a. Odeeffannoon addatti si adda baasu hin jiraatu.

Argannoon qorannichaa ummata qorannichaaf waliigalaa kan ta'u yoo ta'u, namoota dhuunfaa irratti waan addaa kan hin

calaqqisiifne ta’a. Gaaffiin kun adda baastoota dhuunfaa agarsiisuu akka hin daballeef koodii ni kennama. Gabaasa afaaniin ykn barreeffamaan qorannichaan si walqabsiisuu danda’u keessatti eeruun hin kennamu.

6. Mirga

Qorannoon kanaaf hirmaannaan guutummaatti fedhii ofiitiin kan raawwatamudha. Qo’annoo kana irratti hirmaachuu fi dhiisuu kee labsuuf mirga qabda. Yoo hirmaachuuf murteessite yeroo barbaaddetti qorannicha keessaa ba’uuf mirga qabdakunis faayidaa kasaaraa karaa biraatiin siif malu kamiyyuu si hin mallatu. Gaaffii deebii kennuu hin barbaanne kamiyyuu deebisuun si hin barbaachisu.

Odeeffannoo kana waan qabaattaniif, qo’annaa irratti hirmaachuuf fedhii qabdaa?

☐ Walii galuu ☐ Walii hin ga

Kutaa Tokkoffaa: Amaloota hawaas-dimoogiraafii dhukkubsataa

lakk	Gaafilee	Deebii	yaada
101	Umurii dhukubsataa	----------	
102	Saala dhukubsataa	1. Dhiira 2. Dubartii	
103	Bakka jireenyaa dhukkubsataa	1. Magaalaa 2. Baadiyyaa	
104	Haala gaa'ilaa dhukubsataa	1.Kan hin fudhiin /heerumiin 2. Fuudhaa fi heeruma 3. Hiikkaan 4. Dubartii abbaan manaa irraa du'e	
105	Sadarkaa barnoota dhukkubsataa	1. dubbisuu fi barreessuu dadhabuu 2. Dubbisuu fi barreessuu ni danda'a 3. Mana barumsaa sadarkaa tokkoffaa (1-8) . 4. Mana barumsaa sadarkaa lammaffaa (9-12) . 5. Mana Barumsaa Teeknikaa (TVET) . 6. Digirii fi isaa ol	
106	Hojiin dhukkubsataa maaliidha?	1 Hojjetaa mootummaa 5. Barataa 2. Qonnaan bulaa 6. Kan biro 3. Konkolaachisa 4 .daldalaa	
107	Galii ji'aa dhukubsataa	……..	

108	Baay'inna maatii mana tokko keessa jiraatan		
109	Yeroo miidhaan qaamaa sirra gahe miseensa maatii wajjin wal dhabdee qabdaa?	1.eyyee 2. miti	
B. Amaloota amala			
201	Alkoolii ni fudhatta/dhugda?	1.eyyee 2.miti	Lakki Yoo Ta'ee Gara Q202tti darbi
202	Gaaffiin 201 eeyyee yoo ta'e, Yeroo meeqa?	1. _____Guyyoota/turban 2. _____Guyyoota/ji'a 3. kan biro_____	
203	Caatii ni qaaamtaa?	1. eyyee 2.miti	Lakki Yoo Ta'ee Gara Q206tti darbi
204	Yoo Eeyyee yoom caatii ni qaamtaa?	1. Hojii jalqabuu dura 2. osoo hojjatuu 3. yeroo laaqanaatti 4. yeroo hojii irraa 5. kan biro	
205	Guyyatti caatii hagaam qaamta?	1._____guyyaatti/torbeetti 2._____guyyaatti/ji'aatti	
206	Ji'oota 12 darban keessatti sigaaraa xuxxe bektaa?	1.Eyyee 2.Lakkii	Yoo lakkii 301 tti darbi

207	Guyyaatti Yeroo meeqa?	1._____Guyyoota/turban 2._____Guyyoota/ji'a 3. Kanneen biroo _____ .	
208	Sigaaraa meeqa hojjetta Yeroo tamboo xuuxuu tokkotti tamboo xuuxuu?		
C- Dur--Haala fayyaa dhukkubsataa			
301	Dhukkubsataan kun osoo gara biyyaatti hin dhufin dura rakkoo fayyaa yeroo dheeraa qabaa	1.Eyyee 2.lakkii	Yoo lakkii ta'ee Q303tti utaalii
302	Gaaffiin lakkoofsi 210 eeyyee yoo ta'e rakkoo fayyaa gosa kam qabda?	1. Dhiibbaa dhiigaa 2. DM 3. Seenaa miidhamuu kanaan dura 4. Dhukkuba garaachaa 5. Kan biro	
D. Profaayilii miidhaan dhukkubsataa kutaa balaa tasaa daawwatu			
401	Gaaffii lakkoofsa 301 irratti eeyyee yoo ta'e, Akkamitti miidhamte? Yookiin Miidhaan sun akkamitti raawwatame?	1) balaa tasa trafiika karairratti 2) Balaa kufaatii 3) Gubuu 4) Rasaasa 5) haaduun waraanamu 6) Maashinoota 7) Lola 8) Kan biro	Yoo balaa tasa trafiika hin tannee, Q403 darbii
402	Deebiin kee gaaffii lakkoofsa 402 irratti balaa tasaa dandirratti yoo ta'e, Gosa konkolaataa	1. Sinotruck 2. Baajaaj 3. Minibaasii 4. Mootar saayikilii	

		5. Konkolaataa fe'umsaa 6. Kanneen biroo, ibsaa---------- .	
403	Yeroo taatee sanatti namni miidhame maal hojjechaa ture?	1. karaa qaxxaamuruu 2. karaa cinaa deemuu 3. Imaltuu konkolaataa keessa jiru 4. Konkolaachisuun 5. Mana 6. Mana Barumsaa 7. Kanneen biroo _____	
404	Mobaayila fayyadamteettaa?	1. eyyee 2. lakkii	
405	Yeroon miidhamuu yoom ture?	1. Ganama 2. Guyyaa 3. Halkan	
406	Dhukkubsataan gara kutaa balaa tasaa eessaa irraa dhufe?	1. Bakka hojii irraa 2. Buufata fayyaa irraa 3. Dhaabbata fayyaa dhuunfaa irraa 4. Naannoo taatee 5. Kan biroo (ibsi).	

Gaaffiiwwan af-gaaffii gadi fageenyaa kutaa qulqullinaaf

Guyyaa ……. Umurii ……. Koorniyaa …….

Ogummaa …….

1. Balaan tiraafikaa daandii irratti mudatu rakkoo guddaadha jettanii yaaddu? ..... .

2. Wantoonni balaan tiraafikaa daandii mudachuuf haala mijeessan maali jettanii yaaddu?

3. Balaa tiraafikaa kanaaf eenyutu itti gaafatama jettanii yaaddu?

4. Tarkaanfiiwwan nageenya tiraafikaa hojiirra oolchuu irratti rakkoon jiraa?

5. Balaa tiraafikaa hir'isuuf tarkaanfii akkamii fudhattu?

6. Tooftaalee balaa tiraafikaa daandii hir’isuuf yaadni fi yaadni keessan maali?

7. Nageenya daandii naannoo keessanitti rakkoon guddaan maal fa’a jettanii yaaddu?

Annex IV: Bivariable Analysis

Bivariable analysis of factors associated with road traffic accident among injured adult patients who visited the emergency department of Jimma university medical center, south west Ethiopia, 2024

Variable	Category	RTA		COR(95%CI)	P-value
		Yes (%)	No (%)		
Age	≤20	46(65.7)	24(34.3)	.773(.387,1.55)	.353
	21-30	105(68.2)	49(31.8)	.865(.479,1.57)	
	31-40	62(72.9)	23(27.1)	1.09(.551,2.15)	
	>40	57(71.3)	23(28.7)	1	
Sex of the patient	Male	206(68.4)	95(31.6)	.813(.479,1.38)	.443
	Female	64(72.7)	24(27.3)	1	
Place of residence	Urban	116(69.9)	50(30.1)	1.039(.672,1.61)	.862
	Rural	154(69.1)	69(30.9)	1	
Marital status	Single	107(66.9)	53(33.1)	1	.240*
	Married	147(70.3)	62(29.7)	1.18(.754,1.83)	
	Others	16(80.0)	4(20.0)	1.99(.631,6.22)	
Educational status	Can read and write	76(71.7)	30(28.3)	.974(.419,2.27)	.963
	Primary school 1-8	79(66.4)	40(33.6)	.760(.334,1.73)	
	Secondary school 9-12	66(71.0)	27(29.0)	.940(.400,2.23)	
	TVET	23(65.7)	12(34.3)	.737(.269,2.03)	
	Degree and above	26(72.2)	10(27.8)	1	
Occupational status	Government employee	35(57.4)	26(42.6)	1	.085*
	Merchant	46(63.0)	27(37.0)	1.27(.632,2.54)	
	Farmers	99(79.2)	26(20.8)	2.83(1.453,5.51)	
	Student	49(68.1)	23(31.9)	1.59(.779,3.27)	

	Other	41(70.7)	17(29.3)	1.79(.838,3.83)	
Income	<500	114(67.1)	56(32.9)	1.07(.631,1.79)	.964
	500-2500	61(75.3)	20(24.7)	1.59)(.830,3.07)	
	2500-5000	30(76.9)	9(23.1)	1.75(.743,4.09)	
	>5000	65(65.7)	34(34.3)	1	
Family size	<5	226(71.3)	91(28.7)	1.58(.928,2.69)	.092*
	≥5	44(61.1)	28(38.9)	1	
Conflict with family members	Yes	35(89.7)	4(10.3)	4.29(1.49,12.34)	.007*
	No	235(67.1)	115(32.9)	1	
Drink alcohol	Yes	58(81.7)	13(18.3)	2.24(1.17,4.26)	.015*
	No	212(66.7)	106(33.3)	1	
Chewing chat	Yes	55(66.3)	28(33.7)	.831(.496,1.39)	.484
	No	215(70.3)	91(29.7)	1	
Smoking cigarette	Yes	9(69.2)	4(30.8)	.991(.299,3.29)	.989
	No	261(69.4)	115(30.6)	1	
Chronic health problems	Yes	62(75.6)	20(24.4)	1.48(.845,2.58)	.172*
	No	208(67.8)	99(32.2)	1	
Type of health problem	Hypertension	26(76.5)	8(23.5)	1	.449
	DM	11(91.7)	1(8.3)	3.39(.377,30.39)	
	Previous history	21(70.0)	9(30.0)	.718(.236,2.19)	
	Epilepsy	4(66.7)	2(33.3)	.615(.095,4.01)	
Using mobile phone during injury	Yes	121(91.0)	12(9.0)	7.25(3.81,13.78)	.000*
	No	149(58.2)	107(41.8)	1	

**indicates variables selected for multivariable analysis (p-value<0.25), COR: Crude odd ratio, 1: reference categories, CI: Confidence interval*

ANNEXV: DECLARATION

I, the undersigned, Master of Public Health in General Public Health student declare that this proposal is my original work in partial fulfillment of the requirement for the degree of Master of Public Health in General Public Health.

Name of the student _Abonesh Beley

Date December 6th 2024 ___ Signature. 

—

APPROVAL OF THE ADVISOR

Name of the first advisor: Diriba Feyisa

Date: December 6th 2024 Signature. 

APPROVAL OF THE CO-ADVISOR

Name of the second advisor: _Girma Garedew

Date. _ December 6th 2024 Signature. 

ANNEX VI: ETHICAL APPROVAL LETTER

Salale University
Institutional Research Ethics Review Committee (SIU-IRERC)

Date: 22/10/2016

Ref. No: SIU-IRERC-180/2016

To: Abonesh Belay

Subject: Research Ethics Approval Letter

This is to kindly notify you that your project protocol entitled "Magnitude of road traffic accidental injury and associated factors among adult patients who visited the emergency department of Jimma university medical center, Oromia Ethiopia 2024" has been approved for the intended one-year period of implementation. The review process of the Research protocol has been carefully conducted by Salale University institutional research ethics review committee (SIU-IRERC). The protocol is ethically sound to be implemented through adhering to the research ethics principles during the implementation. Thus, the committee is pleased to inform you that your study protocol has been approved.

The committee would like to remind you that the research principal is expected to submit a progress report of the research at least once before the end of its implementation. The committee also looks forward to receiving the final technical report and recommendations that will be generated from the study.

Sincerely

Solomon Balami(Phd)
Salale University IRB
Chairperson

CC:

- **Salale University Institutional Research Ethics Review Committee**
- **Salale University Collage of Health sciences CARD**