Quarterly NCD Report

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Towards a Healthy Lifestyle
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CVD risk assessment

Usage of tobacco, having an unhealthy diet, being physical inactive, being obese, having elevated blood pressure, having abnormal blood lipids (being a dyslipidaemic) and having an elevated blood glucose (being a diabetic) are considered as risk factors that influences the development of cardio-vascular diseases (CVD). If an individual continuously exposed to these risk factors, it may lead to further progression of atherosclerosis, resulting in clinical manifestations of CVD that includes angina pectoris, myocardial infarction, heart failure and stroke. Therefore, it is evident that total CVD risk depends on the individual's overall risk-factor profile.

In the year 2007, WHO published guidelines for the assessment and management of CVD risk that provide guidance for reducing disability and premature deaths from CVD in people at high risk who have not yet experienced a cardiovascular event. The WHO and International Society of Hypertension (WHO/ISH) CVD risk prediction charts for the regions were published. In the year 2019, WHO updated the CVD risk chart.

In view of maximize between-region variability and minimize heterogeneity in mortality and major drivers of health outcomes within each region, the 2019 CVD risk prediction charts were designed and tested for 21 global regions. They are produced as laboratory-based and non-laboratory-based charts. The laboratory-based algorithms (LBC) use information on age, sex, smoking status, systolic blood pressure, history or evidence of diabetes mellitus, and the total cholesterol value as input variables. The non-laboratory-based algorithms (NLB) require age, sex, smoking status, systolic blood pressure and body mass index (BMI) as inputs variables, information on diabetes mellitus and cholesterol are not required for these charts. This approach is not recommended to use in those with persistently raised blood pressure 160/100 mmHg or more, diabetes with renal disease, established ischemic heart disease and blood cholesterol 309 mg/dl or more.

Laboratory-based CVD risk charts are recommended in a setting where laboratory facilities, and human and financial resources are accessible. These charts would facilitate health providers to initiate an intervention and treatment regimen, and to implement an appropriate follow-up plan based on the patient's total risk status.

Non-laboratory-based WHO CVD risk charts could be used to predict total CVD risk without information on total cholesterol and diabetes in low-resource settings where limited testing facilities or limited financial and physical capacity for biochemical measurements are available. These charts can be used for decisions regarding referral i.e. identifying a subset of the population who might benefit from laboratory-based risk assessment charts and could allow for a two-stage process that reduces the number of people at lower levels of risk who are subjected to unwarranted testing in resource poor settings. In such circumstances individuals with a total CVD risk level of 10% and above should receive an assessment using laboratory-based charts after measurement for diabetes and cholesterol. It has been revealed, an existence of a moderate agreement between WHO CVD risk predictions using laboratory and non-laboratory algorithms in population samples. Furthermore, non-laboratory-based CVD risk chart does not allow for the extra CVD risk associated with diabetes mellitus and substantially underestimates CVD risk in individuals with diabetes mellitus.

References

1.World Health Organization, 2020. Hearts: technical package for cardiovascular disease management in primary health care

2.World Health Organization, 2020. WHO package of essential noncommunicable (PEN) disease interventions for primary health care

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Screening of eligible participants for chronic NCDs

Screening for chronic NCDs is conducted in healthy lifestyle centers. There are 1064 Healthy Life Centers in Sri Lanka with the majority of them functioning in primary care institutions. The 35 years and above age group are considered as the target population eligible for screening, which is estimated as 40% of the mid-year population. A total of 122,326 participants were screened during the 1st quarter of 2022 and the estimated mid-year population for the year 2021 was used for the calculations.

Table 1 shows the cumulative number of eligible participants screened from the year 2011 to the first quarter of 2022.

Table 1: Eligible participants screened from the year 2011 to first quarter of 2022

Year	Eligible participants screened (%)	Percentaage of eligible participants screened	Cumulative number of eligible participants screened
2011	131,144	2.6	131,144
2012	203,939	4.0	335,083
2013	336,446	6.6	671,529
2014	383,161	7.5	1,054,690
2015	391,260	7.7	1,445,950
2016	540,535	10.6	1,986,485
2017	493,965	9.7	2,480,450
2018	511,438	10.0	2,991,888
2019	605,148	6.9	3,597,036
2020	321,055	3.7	3,918,091
2021	255,333	2.9	4,173,424
2022 Q1	122,326	1.4	4,295,750

Of the target population, only 1.4 % (122,326) was screened which included 83,944 (65.3%) females and 44,625 (34.7%) of males. Mannar, Badulla, and Kalmunaei were the districts with the best coverage.

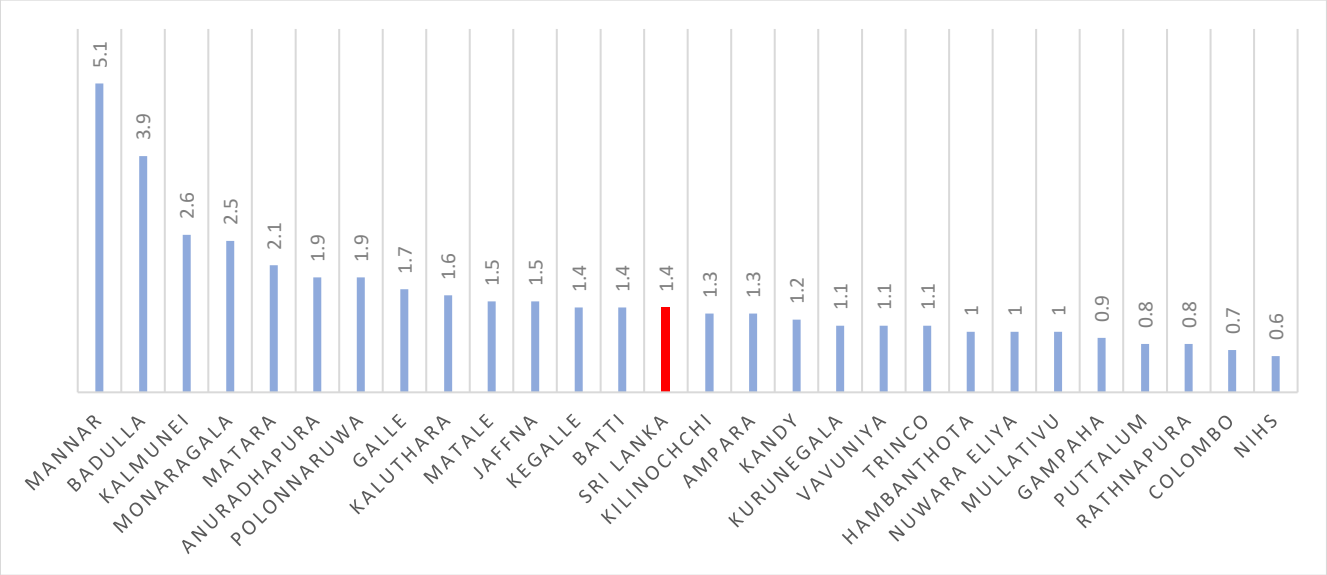

Figure 1: Distribution of percentage of eligible participants screened by the district in 1st quarter, 2022.

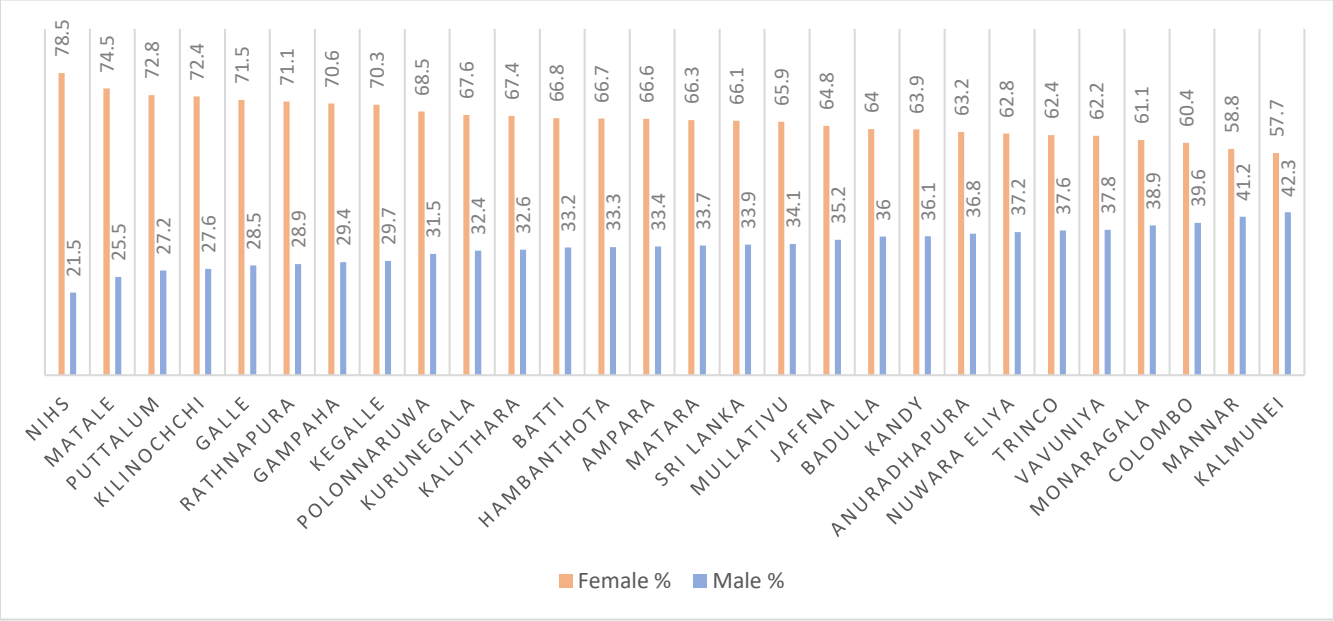

Figure 2: Distribution of percentage of eligible males and female participants screened by the district in 1st Quarter of 2022

Screening for risk factors

Tobacco Smoking[1]

Out of the total eligible population screened, 7.83 % (n=10,315) were tobacco smokers. From the eligible male population screened 9,990 (22.4%) were tobacco smokers while among the eligible female population screened only 325 (0.37%) were tobacco smokers.

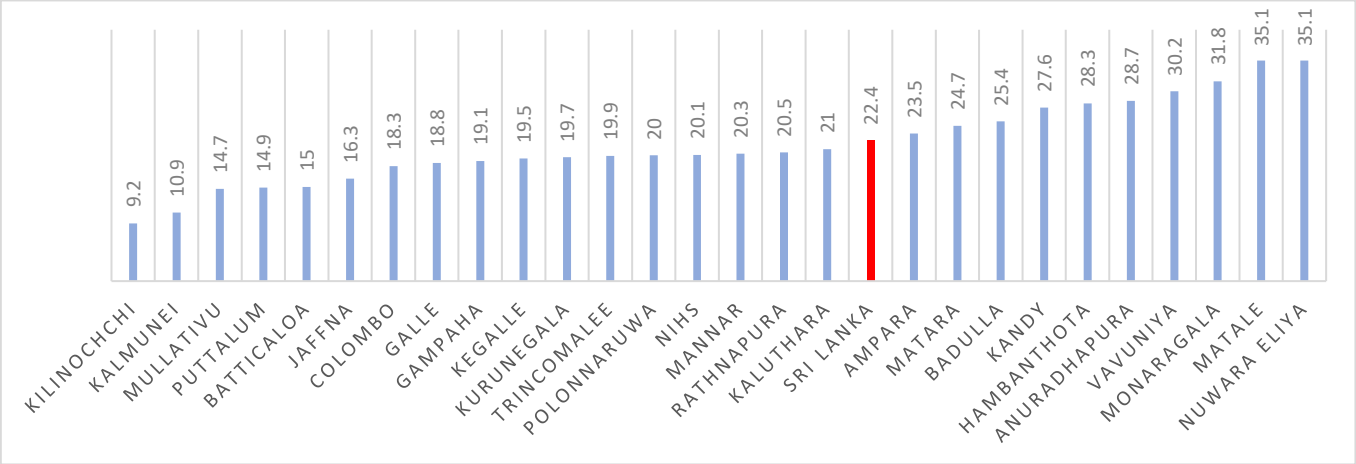

Figure 3: Distribution of percentage of male tobacco smokers among the total eligible male population screened by the district in 1st quarter 2022

Chewing betel (with tobacco or arecanut)[2]

Among the eligible population screened 22,217 (18.2%) chew betel (with or without tobacco) while 31.6% (n=14,089) males and 9.7% (n=8,128) females chew betel among the respective eligible populations screened.

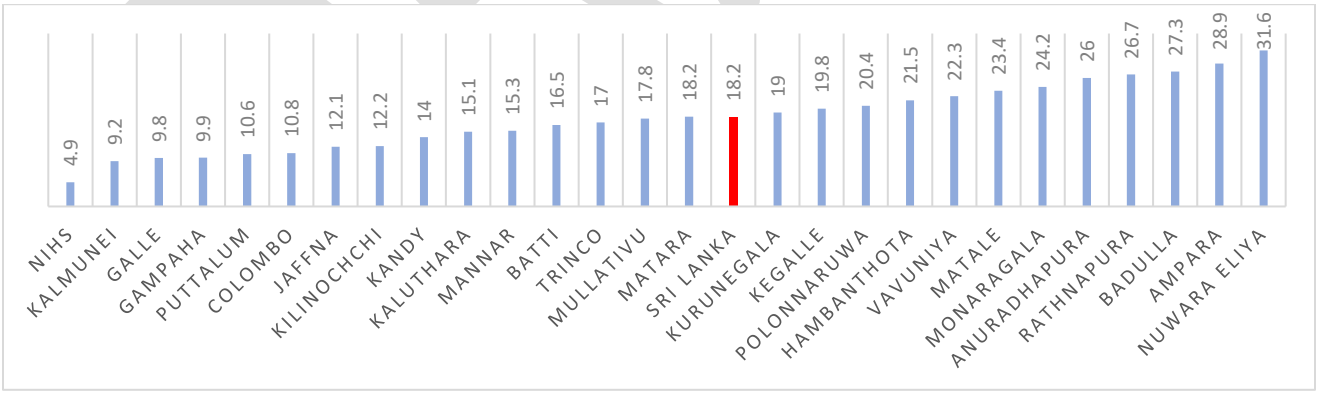

Figure 4: Distribution of percentage of participants chewing betel with tobacco or arecanut among the eligible population in screened-in 1st quarter, 2022

[1] All current tobacco smokers and those who have quitted tobacco smoking less than a year before the assessment were considered as tobacco smokers. Since tobacco smoking among females was very low, the percentage of male smokers out of the eligible males screened is described to prevent the underestimation of the prevalence of smoking where the majority of screened were females

[2] Current betel chewers (with tobacco or arecanut) and those who have quitted betel chewing within a year of the assessment were considered as betel chewers

Alcohol use[3]

Of the eligible population screened 12.3% (n=16,250) were alcohol users. There were 0.21% (n=183) female and 36.0% (n=16,063) male alcohol users among the respective eligible populations screened.

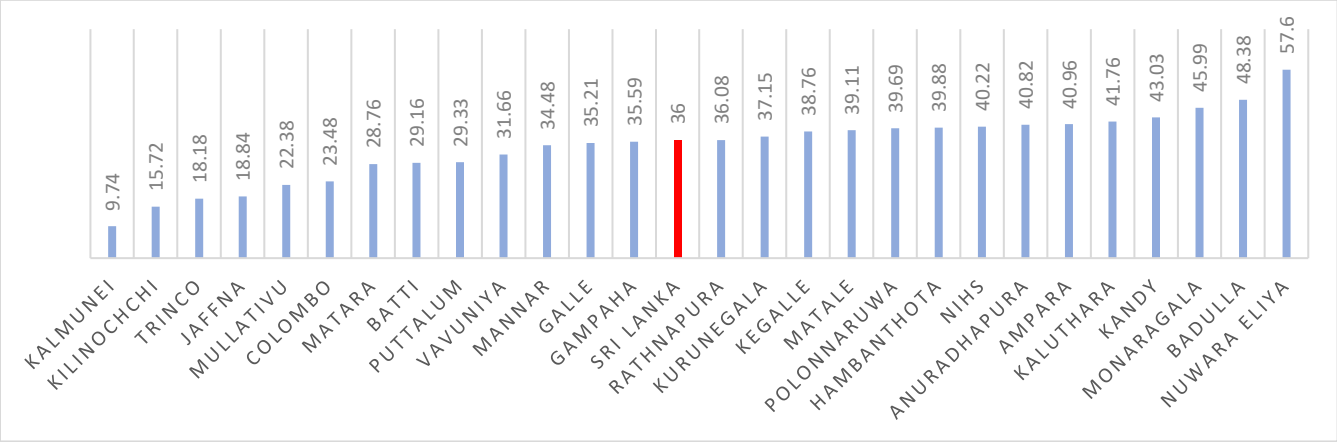

Figure 5: Distribution of percentage of male alcohol users among the eligible males screened by the districts in 1st quarter, 2022

Overweight[4] and obesity[5]

Of the eligible population screened 29.52% (n=38,904) and 11.82% (n=15,580) were found to be overweight and obese respectively. Prevalence of over weight was 32.3% (n=28,143) and 24.1% (n=10,761) among females and males screened. The proportion of obese was 14.4% (n=12,536) and 6.8% (n=3,044) among females and males respectively.

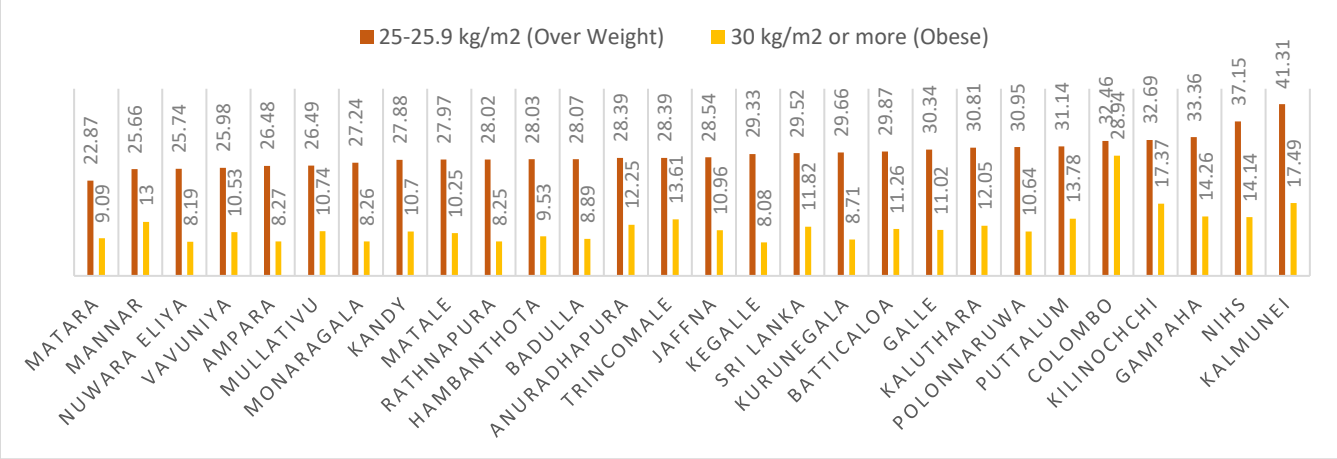

Figure 6: Distribution of percentage of participants with overweight and obesity among the eligible population screened by districts in 1st Quarter of 2022

[3] Current alcohol users and those who had quitted alcohol use within a year of the assessment were considered as alcohol users. Since alcohol usage among females was very low, the percentage of male alcohol users out of the eligible males screened is described to prevent the underestimation of the prevalence of alcohol use where the majority of screened were females

[4] BMI between 25 to 29.9 kg/m2 was considered as overweight

[5] BMI of 30 kg/m2 or above was considered as obese

High Blood pressure[6]

Of the eligible population screened, 32,631 (24.8%) had hypertension. Among the participants screened 26.8% (n=11,940) males and 23.74% (n=20,691) females had high blood pressure among the respective eligible populations screened.

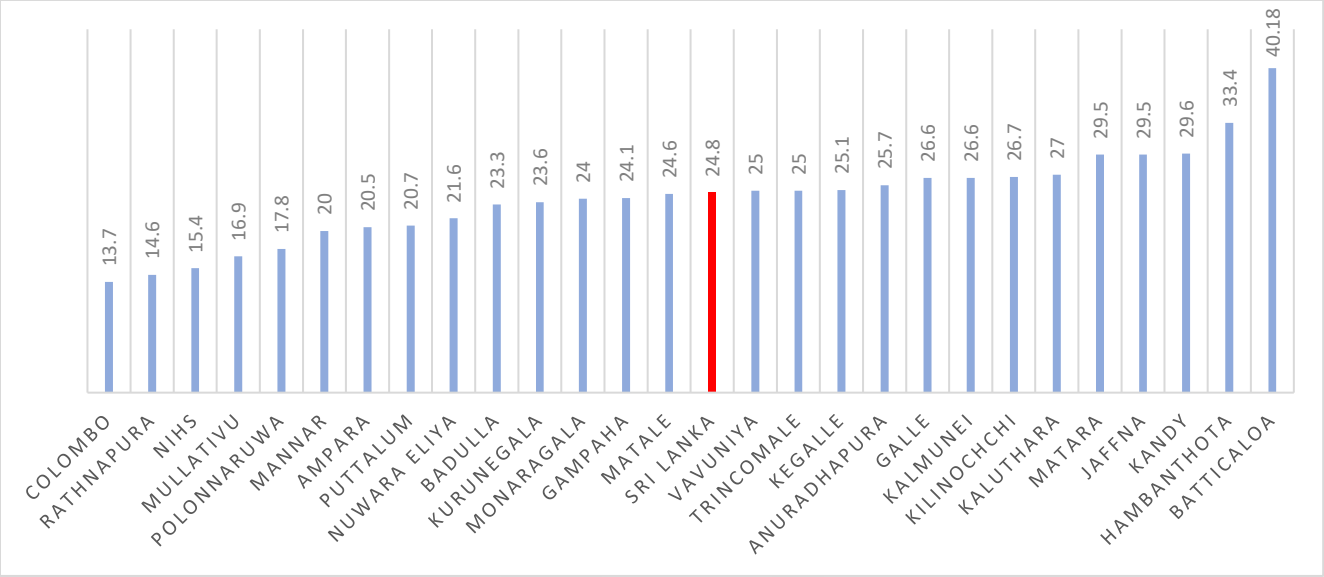

Figure 7: Distribution of percentage of participants with high blood pressure among the eligible population screened by districts in 1st quarter, 2022

High blood sugar[7]

Of the eligible population screened, 12.4% (n=16398) had FBS (Fasting Blood Sugar) or RBS (Random Blood Sugar) values. Among the participants screened 12.5% (n=10,886) females and 12.35 % (n=5,512) males had high blood sugar values.

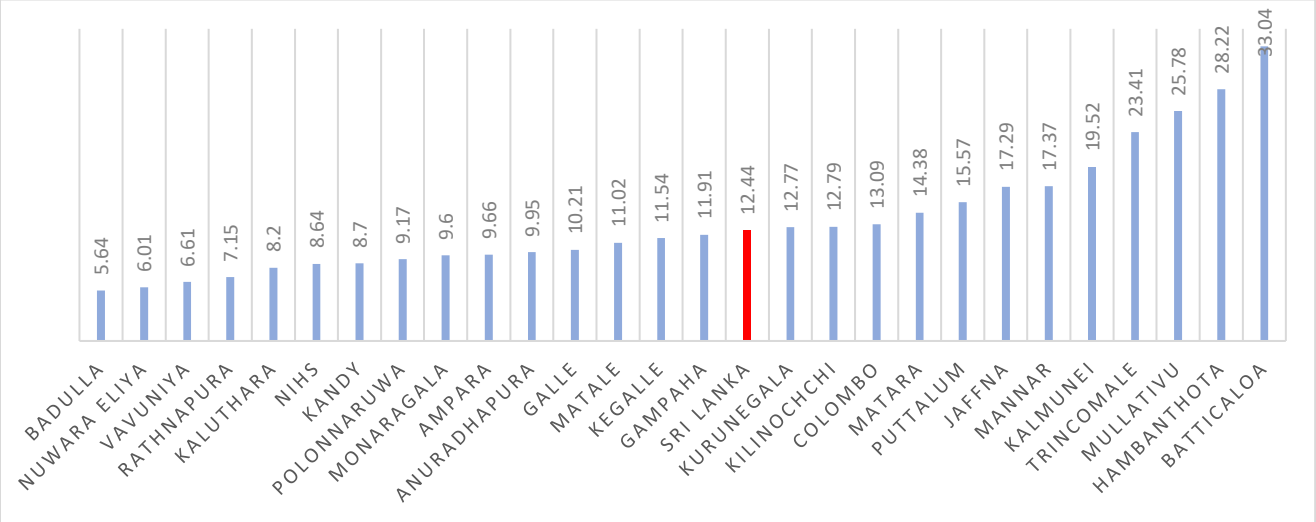

Figure 8: Distribution of percentage of participants with high blood sugar among the eligible population screened by districts in 1st quarter, 2022

[6] Blood pressure of ≥140/90mmHg was considered as high blood pressure

[7] FBS values ≥126 mg/dl or RBS values ≥200 mg/dl were considered as high blood sugar values

High total cholesterol[8]

Of the eligible population screened, 16.9% (n=22,292) had high total cholesterol values. Among the participants screened) 18.17% (n=15,839) females and 14.46% (n=6,453) males had high total cholesterol values.

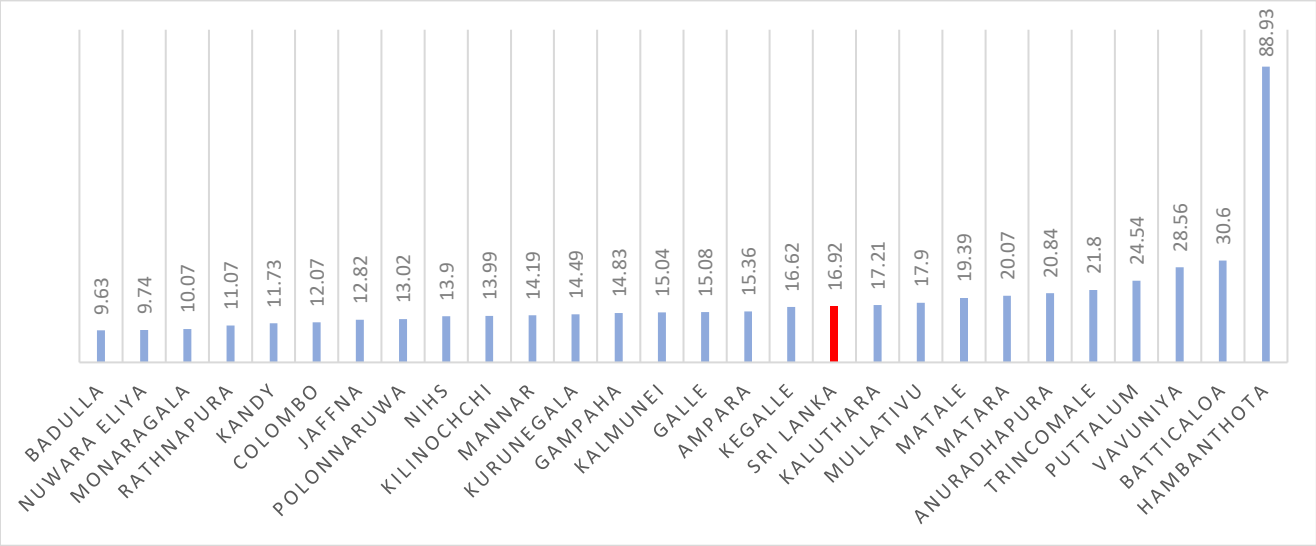

Figure 9: Distribution of percentage of participants with high total cholesterol among the eligible population screened by districts in 1st quarter, 2022

Risk of cardiovascular disease ≥20%

The 10-year cardiovascular risk is estimated using WHO Cardiovascular Risk Chart. Cardiovascular Risk is categorized as <10%, 10% to <20%, and ≥20%. During Q1in 2022, among the eligible participants screened 2.2% (n=2664) were found with cardiovascular risk ≥20%. Among the participants screened, 2.14% (n=995) males and 2.91% (n=1709) females had cardiovascular risk ≥20%.

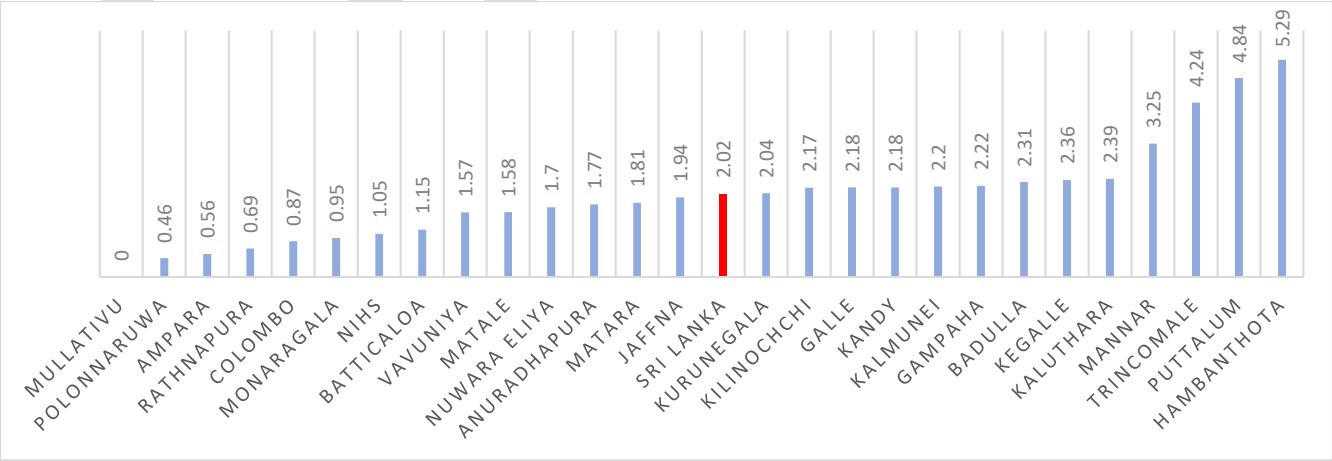

Figure 10: Distribution of percentage of participants with cardiovascular risk ≥20% among the population screened by districts in 1st quarter, 2022

[8] Total cholesterol values ≥ 240/dl was considered as high total cholesterol value

Physical Inactivity[9]

Of the eligible population screened, 30.89% (n=40710) were physically inactive. Out of screened population 26.98% (n=12,040) and 32.9% (n=28,670) were males and females respectively.

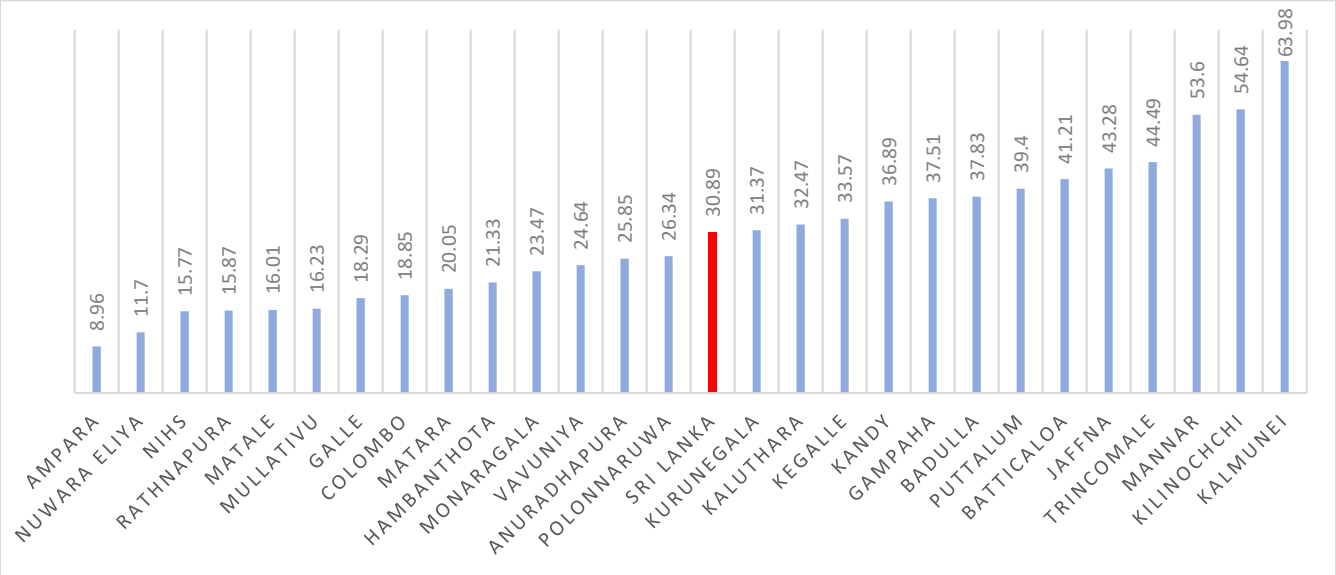

Figure 11: Distribution of percentage of participants with physical inactivity among the population screened by districts in 1st quarter, 2022

[9] Not involved in moderate or vigorous intensity activity throughout the week

National Injury Surveillance System (NISS)

This supplementary document provides information for the first quarter of 2022, entered in the NISS

- Males were mostly affected
- Most of the victims treated as outpatients and inpatients belonged to the age group of 21-30 years; however, the majority of those who died from injuries were the elderly population 51-60 years and >70 years
- Unintentional injuries were the most common; Only 11% of Individuals were killed by intentional injuries
- Injuries commonly occurred during the 6am to 6 pm
- Majority of those treated as outpatients were due to animal bites (67%); out of all inpatients, falls were the commonest mechanism of injury (24.5%)
- Deaths were mainly due to transport injuries (33.3%)
- Leading place of occurrence of injury was home
- Most of the victims had superficial injuries while limbs were the mostly affected body region

Reporting of injuries and injury related death notifications

Surveillance of injuries is crucial for prevention. A comparison of reporting of injuries and injury related deaths in the first quarters of 2021 and 2022 for each district is presented in Table 1.

Table 1: Comparison of reporting of outpatient, inpatient and death notifications by Health divisions in Q1 2022 with Q1 2021

District	Outpatient			Inpatient			Death notification		
	Q1 2021	Q1 2022	% Difference in Q1 2022	Q1 2021	Q1 2022	% Difference in Q1 2022	Q1 2021	Q1 2022	% Difference in Q1 2022
Ampara	704	910	+22.6%	1006	459	–119.2%	9	13	+30.8%
Anuradhapura	710	878	+19.1%	470	627	+25.0%	3	3	0.0%
Badulla	4564	3818	–19.5%	3507	2866	–22.4%	154	33	–366.7%
Baticaloa	1141	1061	–7.5%	1642	3398	+51.7%	59	74	+20.3%
Colombo	0	0	–	0	124	+100.0%	0	0	–
Galle	1023	1788	+42.8%	1017	545	–86.6%	81	141	+42.6%
Gampaha	1000	2649	+62.2%	5651	6394	+11.6%	80	68	–17.6%
Hambantota	772	152	– 407.9%	360	86	–318.6%	28	8	–250.0%
Jaffna	1887	2554	+26.1%	4168	3967	–5.1%	52	36	–44.4%
Kalmunai	1864	2780	+32.9%	3840	4030	+4.7%	16	2	–700.0%
Kalutara	0	559	+100.0%	733	3703	+80.2%	72	207	+65.2%
Kandy	309	755	+59.1%	434	1301	+66.6%	7	1	–600.0%
Kegalle	818	836	+2.2%	443	584	+24.1%	57	66	+13.6%
Kilinochchi	43	337	+87.2%	1290	1979	+34.8%	0	2	+100.0%
Kurunegala	34	509	+93.3%	304	613	+50.4%	6	226	+97.3%
Mannar	121	544	+77.8%	23	163	+85.9%	22	11	–100.0%
Matale	693	185	–274.6%	2	1539	+99.9%	23	34	+32.4%
Matara	1166	645	–80.8%	372	1070	+65.2%	4	0	–
Monaragala	139	944	+85.3%	503	1851	+72.8%	32	30	–6.7%
Mullativ	237	342	+30.7%	556	434	–28.1%	11	0	–
NIHS	0	0	–	0	0	–	0	0	–
Nuwara Eliya	619	811	+23.7%	958	679	–41.1%	17	4	–325.0%
Polonnaruwa	741	384	–93.0%	1902	1906	+0.2%	8	5	–60.0%
Puttalam	1043	805	–29.6%	986	670	–47.2%	22	29	+24.1%
Ratnapura	2306	1163	–98.3%	1584	1389	–14.0%	48	28	–71.4%
Trincomalee	1029	1171	+12.1%	503	632	+20.4%	4	28	+85.7%
Vavuniya	962	684	–40.6%	821	1183	+30.6%	6	2	–200.0%
Sri Lanka	**23925**	**27264**	**+12.2%**	**33075**	**42192**	**+21.6%**	**821**	**1051**	**+21.9%**

Key - % of reporting has reduced. % of reporting has increased

Table 2 shows the summary of the total number reported in different components of the National Injury Surveillance System (NISS) during the first quarter, 2022

Table 2: Summary of the total number reported in different components of the National Injury Surveillance System (NISS) during the second quarter, 2022

Surveillance component	Total number reported
Outpatient (OP)	26143
Inpatient (IP)	39785
Death notification (DN)	990

Error! Reference source not found.1 shows the sex distribution of injury victims reported in different components of NISS. More males were affected than females. Males were highest among all deaths (3/4th of all reported deaths). Overall, more than 2/3rd of the victims were males.

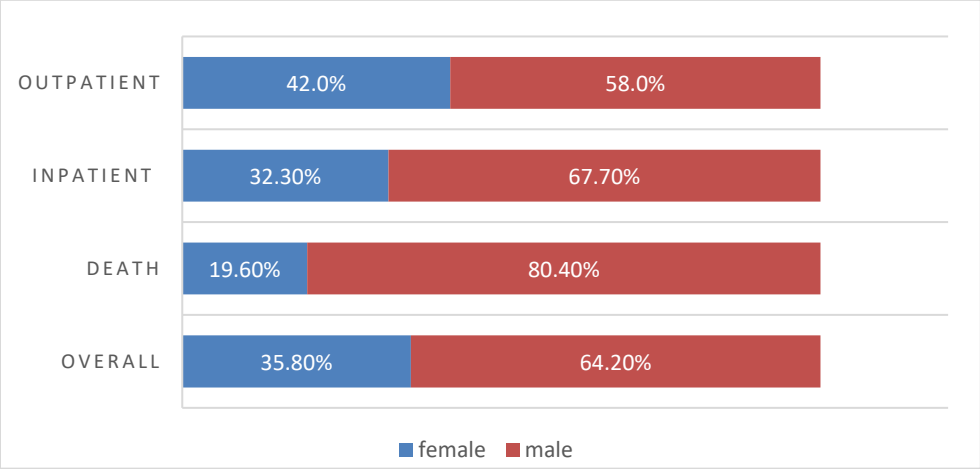

Figure 11: Sex distribution of injury victims.

Highest number of victims was reported among the age group of 21 – 30 years in both outpatient and inpatient surveillances. However, the highest number of deaths was reported among the 51 – 60 years age group. Death rates were relatively high among older age groups.

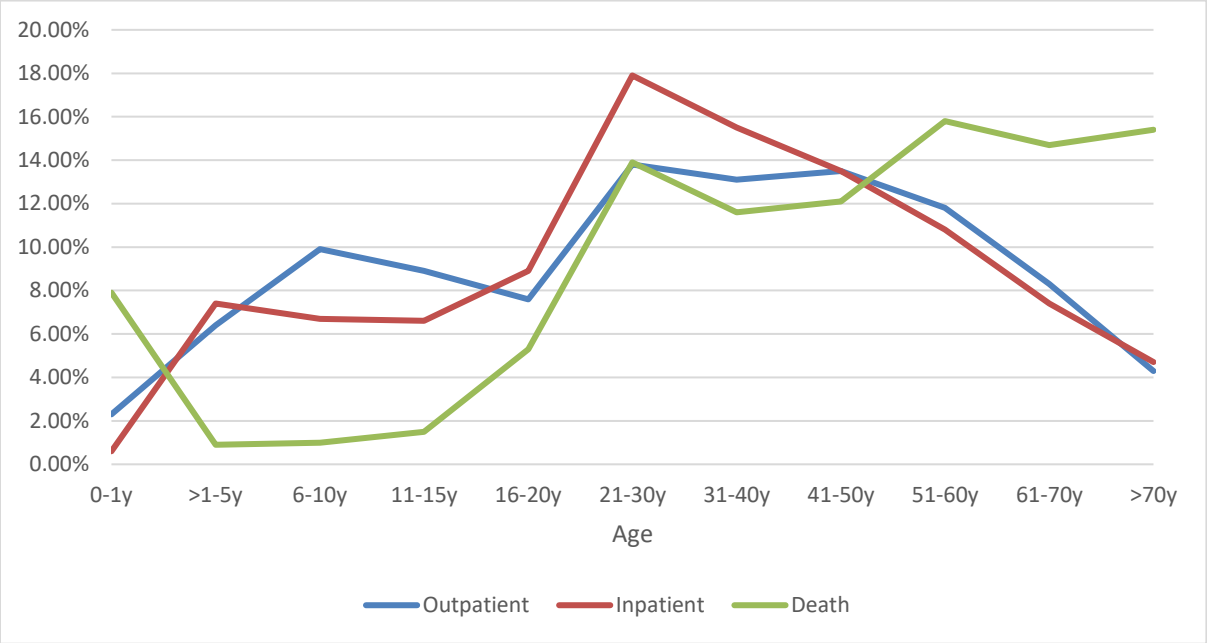

Figure 12: Age distribution of the injury victims

Although 98% and 83% of unintentional injuries were reported in outpatient and inpatient surveillances respectively, it was about 68% among notified deaths.

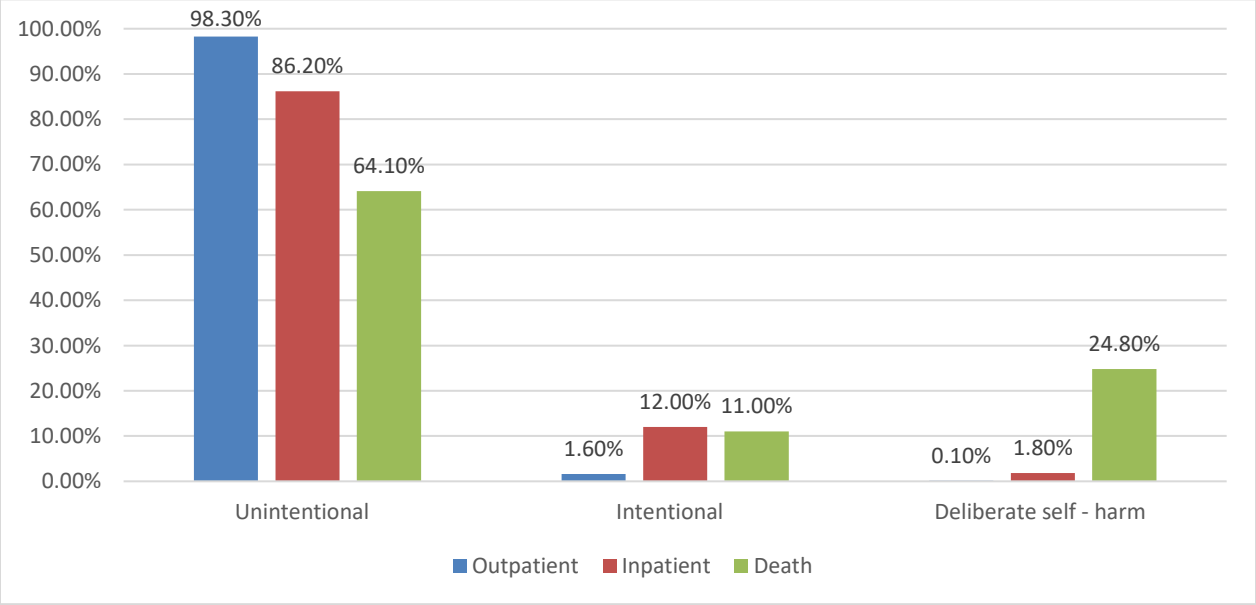

Figure 13: Intention of the injury

Outpatient surveillance

More than 80% of injuries occurred from 6.00 am to 6.00 pm.

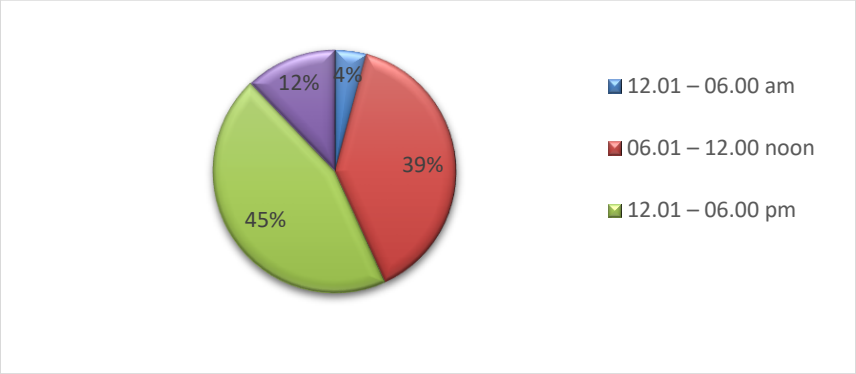

Figure 14: Time of injury

Most injuries were due to Animal bites (67% from total reported) (Figure 15).

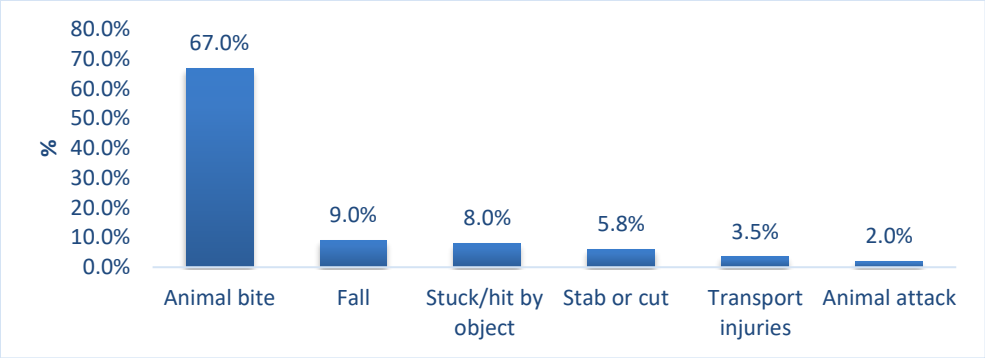

Figure 15: Leading mechanisms of injury

The leading place of occurrence of injuries was home (63.2%) followed by street/road/highway (16.1%).

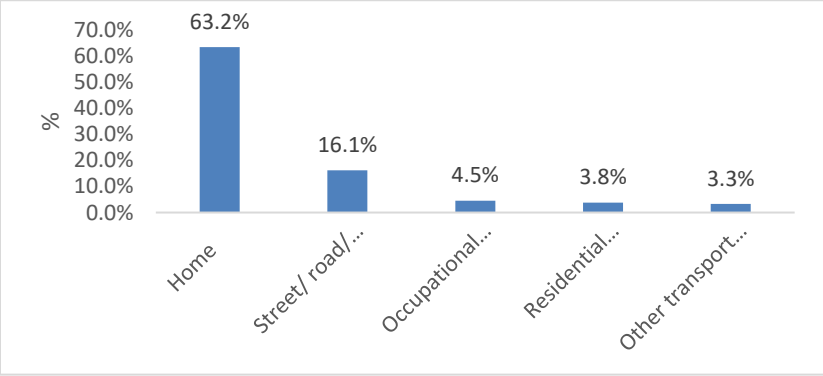

Figure 16: Leading places of occurrence of injuries

The main activity done at the time of the injury was leisure activity followed by household activity, travelling, and working for income. Even though 5.6% of injuries occurred at occupational settings (figure 6), about 11% were injured while working for income.

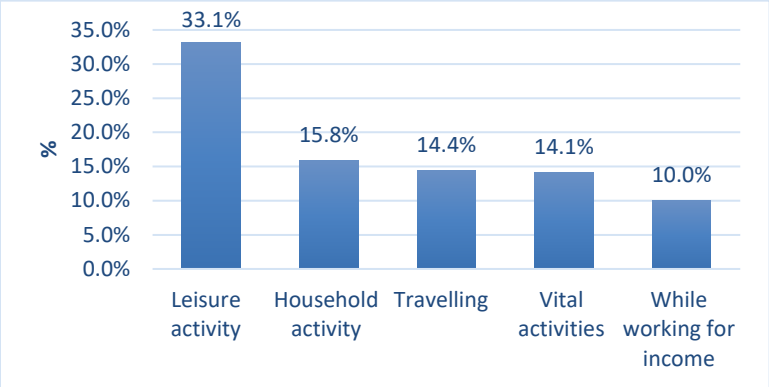

Figure 17: Leading activities done at the time of injury.

More than half of the injuries were reported in the lower limb region of the body (54.6%).

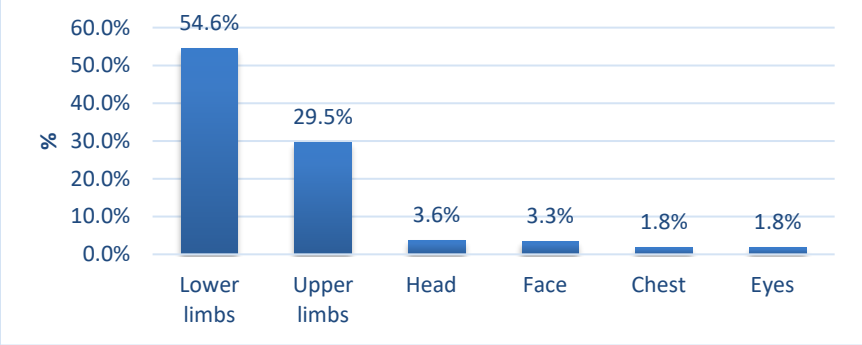

Figure 18: The affected region of the body due to injuries

Most of the victims had superficial injuries (82.3%), while fractures accounted for 1.6% of all injuries.

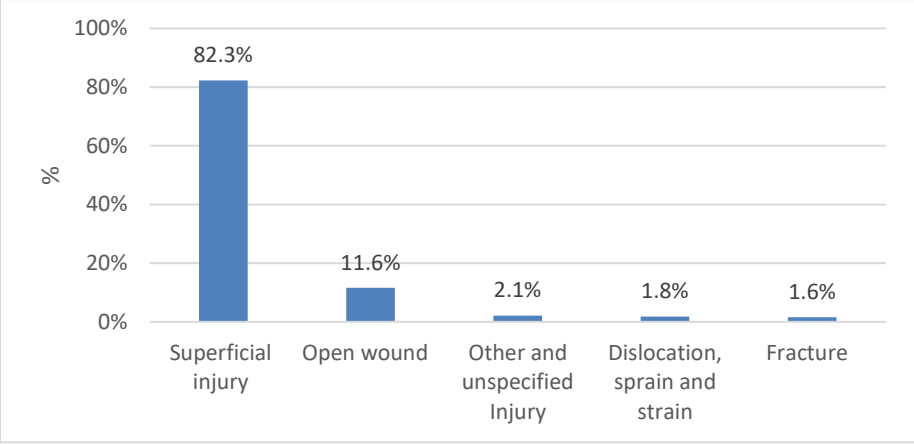

Figure 19: Nature of the injury

Evidence of neither alcohol (98.5%) nor substance use (98.6%) were noted among majority of reported injuries.

Table 3: Evidence of Alcohol use and Substance use

Evidence of	Yes	No	Unknown
Alcohol use	0.4%	98.5%	1.0%
Substance use	0.2%	98.6%	1.1%

Nearly all the victims (99.5%) had no disability at the time of discharge.

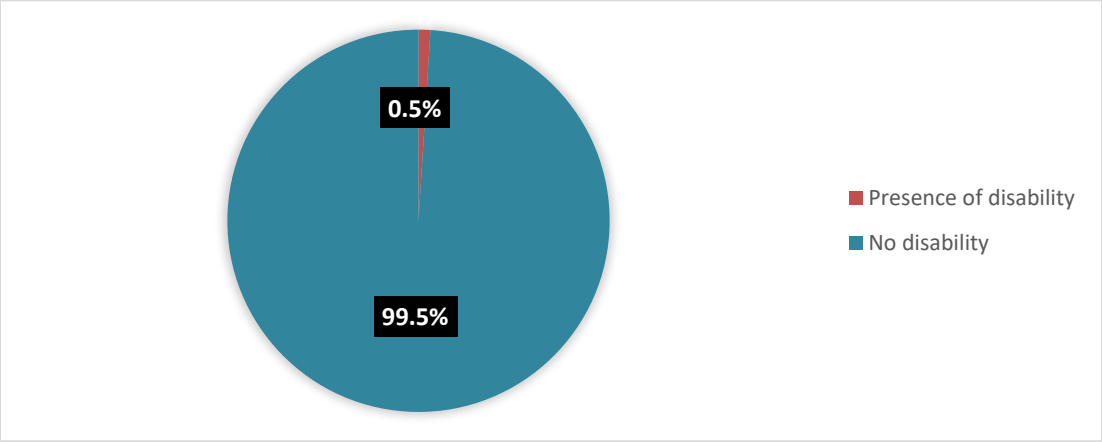

Figure 20: Evidence of disability at the time of discharge

Inpatient surveillance

Of all injuries, 75% occurred from 6.00 am to 6.00 pm. Only about 1/5th of injuries occurred from 6.00 pm to 12 midnight (21%).

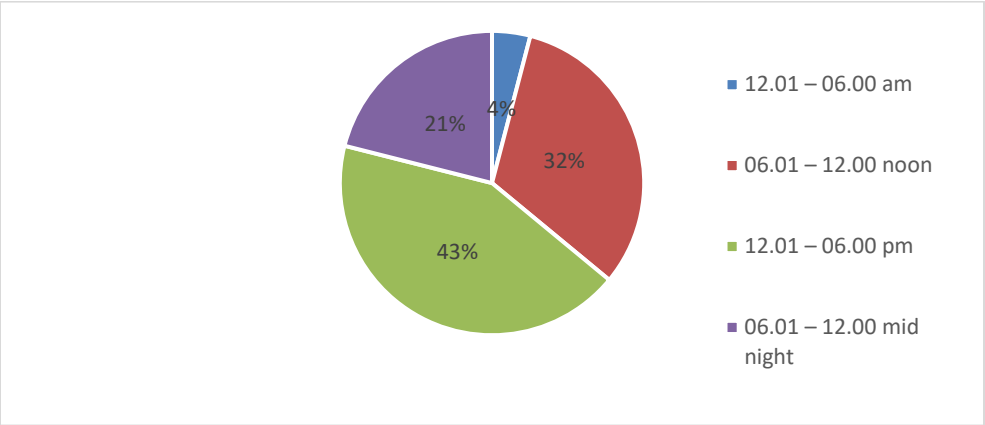

Figure 21: Time of injury

The leading mechanism of injury was falls (24.5%), followed by transport injuries (20.0%), animal bites (14.2%), struck/ hit by object (12.1%) and struck/ hit person (10.8%).

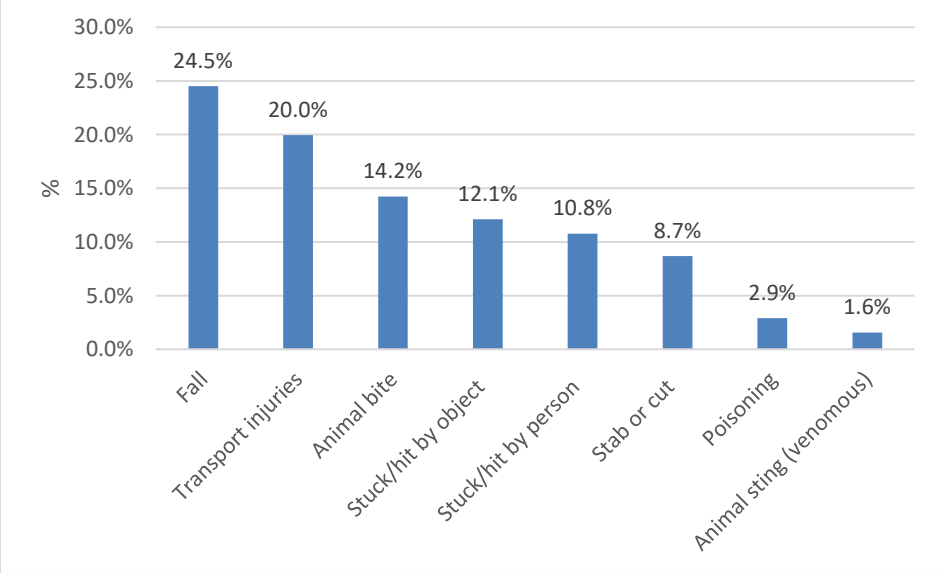

Figure 22: Leading mechanisms of injury

Leading place of occurrence of injuries was home (50.3%) followed by street/road/highway (26.1%).

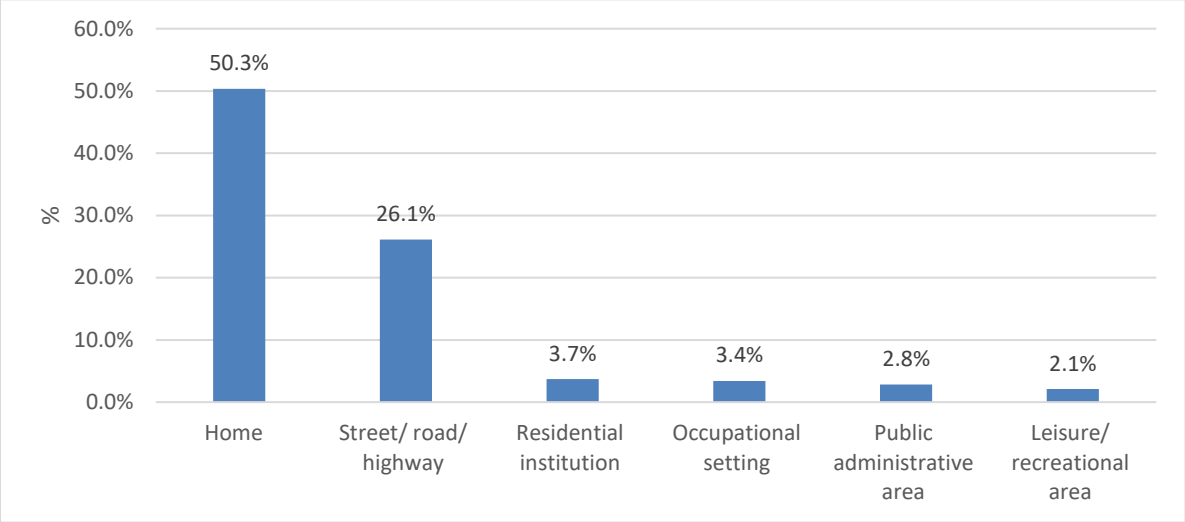

Figure 23: Leading places of occurrence of injury

The main activity done at the time of injury was travelling (26.6%) followed by leisure activity (22.5%), vital activities, household activity and working for income. Even though 3.4% of injuries occurred at occupational settings (figure 23), about 9.5 % were injured while working for income.

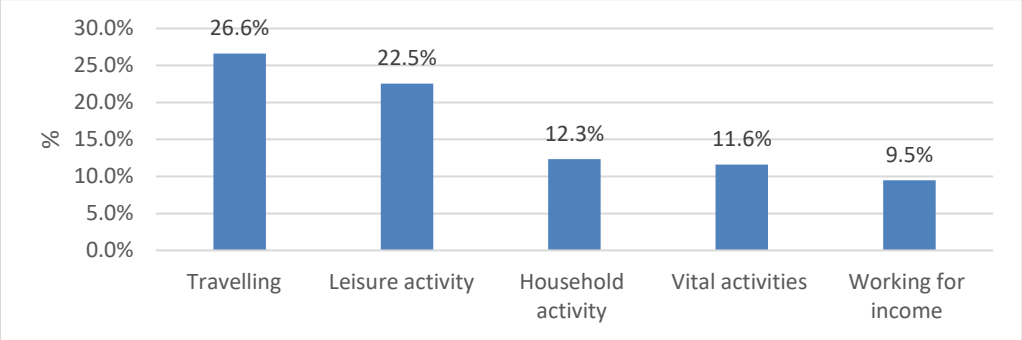

Figure 24: Leading activities done at the time of injury.

Of all victims, upper and lower limb injuries were observed in 54% of victims. 16.7% of victims had head injuries and 6.9% had facial injuries.

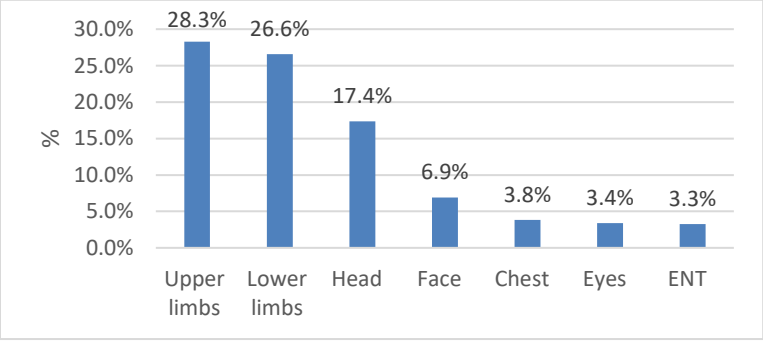

Figure 25: Body region affected

Most of the victims had superficial injuries (57%); 23.3% of the victims had open wounds while 8.8% had fractures.

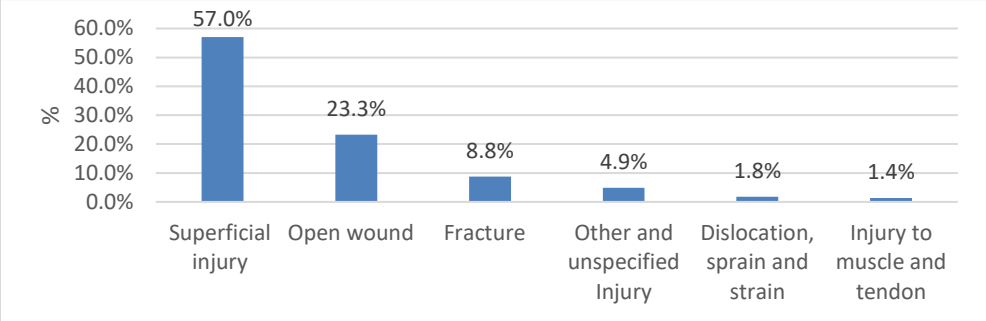

Figure 26: Nature of the injury

Most had no evidence of either alcohol use (88.9%) or substance use (90.4%). Nearly 95% had no disability at the time of discharge.

Table 4: Evidence of Alcohol use, Substance use and Disability at the time of discharge

Evidence of	Yes	No	Unknown
Alcohol use	4.2%	88.9%	6.9%
Substance use	1.6%	90.4%	8.0%
Disability at the time of discharge	5.1%	94.9%	

Death surveillance (Notification)

The leading mechanism of injury related death was due to transport injuries (33.3%) followed by threats to breathing (19.7%), falls (12.1%), and drowning (9.7%). Poison related deaths accounted for 6.9% of all deaths related to injuries.

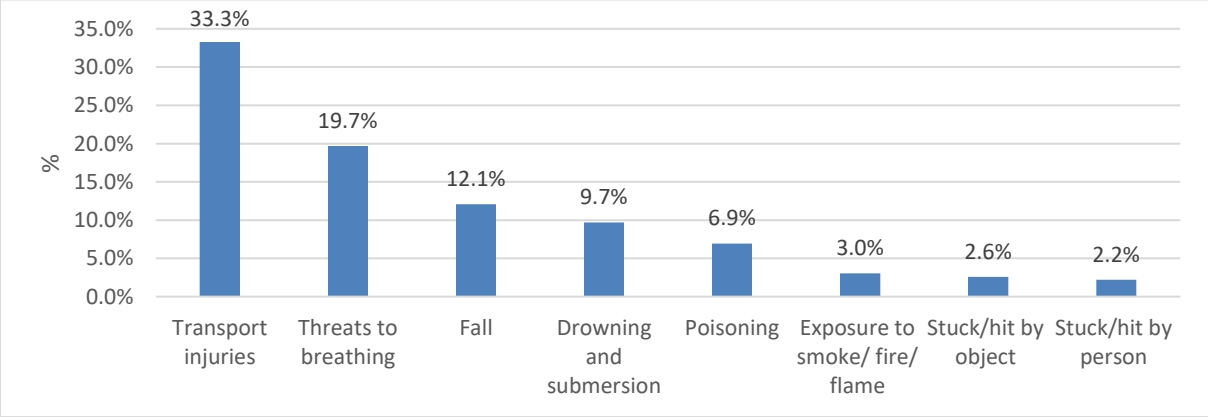

Figure 27: Leading mechanisms of injury related death