Minireview Article

Can Healthy Lifestyles Help Reduce Physical Trauma?

Abstract

Injuries are a leading cause of death in young people. Trauma is responsible for many hospital visits and ranks high in the category of years of potential life lost. There are significant productivity losses due to disability. Consequently, there is a high economic burden to the society. Traumatic injuries may occur due to motor vehicle accidents, falls, fires, drowning, suicide and violence. Unintentional injuries at work, and trauma related to wars and climate related events may also occur. Healthy lifestyles have been associated in a major reduction in chronic diseases and an increase in longevity. Their role in preventing trauma is not well known. This manuscript looks at the scientific evidence that indicates that healthy lifestyles can help reduce traumatic injuries. The five major lifestyles discussed are smoking, alcohol intake, obesity, exercise, and diet.

Keywords: trauma, smoking, lifestyles, exercise, alcohol, diet, obesity

Introduction

Trauma is a pressing public health epidemic[1]. Traumatic injuries also remain an important cause of morbidity and mortality globally, for both developed and developing countries. In 2016 alone, trauma accounted for 29.2 million emergency department visits and 39.5 million physician office visits in the United States[2]. Globally, almost four and a half million people died from an injury in 2019[3]. In the very young, falls cause a significant amount of unintentional nonfatal injures, while bicycle-related accidents and drowning are common causes of fatal injuries in children[4]. Road accidents due to motor vehicles, pediatricians, or cyclists are also common and remain the leading cause of death and disability for 10–24-year-old (6.6%) and 25–49-year-old (5.1%)[5]. Suicide and self-harm are also common6 and a major cause of death for young people[7]. The elderly population is growing rapidly[8]. Falls are the most common cause of injury-related death in those over the age of 70[6]. As a result, this population has become responsible for a 56% increase in trauma-related deaths[9]. Other forms of trauma, murders, wars, climate-related events, etc. are also common[10]. Besides the physical morbidity, trauma is also emotionally disturbing and often results in a long-term adverse effect on the individual's mental, physical, social, emotional, and/or spiritual well-being[11]. Unfortunately, all forms of trauma are on the rise9. Trauma survivors face extensive post-acute care and rehabilitation and result in a significant age-standardized DALYs[5]. It is estimated that the annual burden of trauma care is approximately $670 billion in the United States[12]. This manuscript primarily deals with physical trauma, resulting in injury to a part of the body.

Discussion

Comment [A1]: Too brief. Should be between 350 to 500 words. This is 134 words. Include your study objectives, problem statement, study findings and recommendations in summary form.

Comment [A2]: I think this was not the intended word here

Comment [A3]: This should not be written. Better use .. "among others"

Comment [A4]: Write the words in full then put the initials in bracket since you are mentioning the word for the first time.

Five lifestyles have been recognized as having a major impact on morbidity and mortality[13]. These behaviors are non-smoking, abstinence or low to moderate alcohol intake, a normal body mass index, regular exercise, and a prudent quality of diet[13]. According to Yanping et al., adherence to these lifestyles improves survival[13].

Comment [A5]: Please include the date of publication.

This applies to all the citations done this way in this document

Smoking and Trauma

There are about 1.1 billion smokers worldwide (21% of the world's population) aged 15 years and older[14]. It also causes or contributes to the development of a wide range of communicable and other non-communicable disorders[15,16]. It is associated with high mortality, especially by causing chronic obstructive lung disease, coronary artery disease, and many cancers[17,18]. The average loss of life, compared with never-smokers, is 10–15 years[19].

Smoking is frequently associated with both fatal and nonfatal injuries[20-22]. In the past, most large publications by leading organizations – the National Cancer Society[23], the World Health Organization[24], and the Surgeon General's office[25] have failed to mention the increased risk of trauma faced by smokers. However, several studies have continued to report an increased risk of trauma that smokers face[20-22]. In a meta-analysis of 263 studies, Leistikow et al. found that smokers had an increased risk of traumatic injury, with a relative risk (RR) of 1.61 when compared with non-smokers[26]. The US Centers for Disease Control and Prevention in 2014 mentioned that smoking increases residential fire-related deaths[27]. Besides this risk, smoking may be an independent risk factor for a motor vehicle, occupational, and many other unintentional injuries2[8,29]. Smokers may have a higher propensity for risk-taking, by not wearing a seatbelt in cars[30], having more traffic violations[31], or driving while drunk[32]. Teenagers who smoke cigarettes are more likely to abuse other substances such as alcohol and marijuana and are more likely to be involved in traumatic violence, theft, and suicide[33,34]. Cigarette smoking predisposes the lungs to get injured following an inciting event[26]. It also impedes the lung's capacity for normal healing[35]. Smoking is associated with worse outcomes in critically ill trauma patient[37,37]. Previous studies on adult smokers have demonstrated increased rates of acute respiratory distress syndrome (ARDS) secondary to lung injury when compared to non-smokers in both critically ill and trauma patients[38-40]. In a study of 74 patients by Panzer et al., critically ill adult trauma smokers had an altered respiratory bacterial community including enrichment of Enterobacteriaceae associated with an increased the incidence of ARDS[39]. There is a progressive increase in incidence of ARDS following trauma with increasing age, with a peak incidence in patients aged 60–69 years[41]. On average, smokers spend 5 days longer requiring mechanical ventilation than non-smokers[42]. These factors contribute to increased mortality. Overall, smokers involved in a traumatic event exhibit poor wound healing, delayed bone union, decreased blood flow, diminished tissue oxygenation, diminished immunity, increased wound infections, and more severe pulmonary complications[26,36,43]. For this reason, surgeons prefer or even require smokers to quit smoking weeks before elective surgery[26,28]. Smokers may also be at an increased risk while trying to stop smoking. An attempt to quit smoking may result in deterioration of their mood and cognitive performance within a few hours of beginning to abstain[44]. However, the net effect of smoking cessation is a reduction of both fatal and nonfatal injuries.

Comment [A6]: This sentence is not clear. Let the intended meaning come out clearly.

Obesity and Trauma

BMI (body mass index) is widely used as a measure to define body weight[45]. BMI is categorized into several groups: < 18.5 kg/m^2 (underweight), 18.5–24.9 kg/m^2 (normal weight), and 25 to 29.9 kg/m^2, (overweight)[46]. Obesity is defined as a BMI exceeding 30 kg/m^2 and is subclassified into class 1 (30–34.9), class 2 (35–39.9), and class 3 or severe obesity (≥ 40). A BMI >50 Kg/m2 is considered morbid obesity[47]. Central obesity can be diagnosed by several anthropometric measurements, including waist circumference (<102 cm in males and <88 cm in females), waist to hip ratio (normal: 0.85 or less for women and 0.9 or less for men), and the waist-height ratio (≥ 0.5)[48-50]. Obesity underlies conditions such as cardiovascular disease, hypertension, diabetes mellitus, several cancers, nonalcoholic fatty liver disease, gallbladder disease, pancreatitis, sleep apnea, and osteoarthritis[51]. It also increases the risk of trauma.

Comment [A7]: You have done the opposite. Let the initials be in bracket

Obesity has a complex relationship with trauma[52-65]. Studies show that obese children have more severe injuries and more extremity injuries[53.] Obesity is associated with altered bone metabolism and this results in higher fracture rates[54]. Obese patients have a higher risk of loss of reduction of forearm fractures, more severe supracondylar fractures, and a higher likelihood of lateral condyle fractures[53]. Obese patients are more likely to have complications with femur fractures and have higher rates of foot and ankle fracture[55]. On the other hand, obese children have fewer injuries to the head, abdomen, thorax, and spine[56]. However, they are at increased risk for complications, (deep venous thrombosis, pulmonary embolus, and pneumonia), prolonged ventilation, longer ICU stay, and a higher mortality[57,58]. Injuries to the body trunk vary according to the site. Thoracic injuries are more common and more likely to be lethal[59]. Obese adults tend to have less severe abdominal injury[60]. They may also be somewhat protected against pelvic fracture[61]. The protective effect of obesity may be related to the cushion effect of increased subcutaneous fat[62]. Schott et al. estimated that hip fracture risk was reduced by 40% for a standard deviation increase in fat mass, while changes in lean body mass did not affect fracture rates[63]. Further, there appears to be an obesity paradox when it comes to mortality and trauma[64,65]. Originally established in cancer cardiovascular. and other chronic diseases[66-70] the obesity paradox has been recently observed in trauma patients in two large cohorts[64,65]. In a study of 415,807 patients, Dvorak et al. found that underweight patients had increased odds of mortality (OR 1.378) when compared to those that were overweight (OR 0.916)[64]. Class I obesity was not associated with increased mortality compared to normal weight (1.013). However, Class II (OR=1.178) and Class III (OR=1.515) obesity were associated with increased mortality risk. Farhat et al. also found a diminished mortality risk in obese trauma patients undergoing dialysis[65]. As noted in the study by Dvorak, morbidly obese patients did not show this protection.

Exercise and Trauma

Physical activity is defined as any bodily movement produced by skeletal muscles that result in energy expenditure[71]. Human lifestyle has changed significantly making modern living increasingly sedentary[72]. Sedentary behavior is defined as any waking behavior characterized by an energy expenditure ≤1.5 metabolic equivalents[73] (such as TV viewing, video game playing, computer use, driving or riding in a car, and reading/studying while sitting). It is associated with numerous health risks[74] including obesity, cardiovascular diseases, type 2 diabetes, and cancer. Exercise is a subcategory of physical activity and is planned, repetitive, and purposive[75]. It helps mitigate the development and progression of several chronic diseases and improves mental

health[76]. Besides working out in a gym, exercise can be obtained by participating regularly in activities such as swimming, running, bicycling, gymnastics, playing sports such as soccer or tennis, or participating in recreational social activities such as dancing. The World Health Organization recommends a minimum of 150 minutes of moderate-intensity physical activity per week for adults aged 18-64.and a minimum of 60 minutes a day of moderate to vigorous-intensity physical activity for children and adolescents (age 5-17)[77].

However, exercise is also not injury-proof. Several factors can predispose to exercise-related injury - age, gender, injury history, body size, local anatomy and biomechanics, aerobic fitness, muscle strength, imbalance, ligamentous laxity, central motor control, psychological factors as well as general mental ability[78]. Injury rates go up if the exercise is improperly done (including improper equipment) and in excess (increased intensity, duration, and frequency)[79]. Injuries are common with exercise, especially among runners[80,81]. According to a systematic review, the one-year injury rate was 27% in novice runners, 32% in long-distance runners, and 52% in marathon runners[82]. Injuries have also been reported with non-traditional exercises, such as Tai chi and Yoga[83,84]. These include soreness and pain, muscle damage, and fatigue. Further, several sports/exercises such as taekwondo (lower limb injuries)[85], dancing (back, neck and shoulder, the hip, knee, ankle, and foot)[86], and swimming (shoulder and trunk)[87] have also been associated with injuries. Sports-related concussion is gaining more attention[88]. Besides the immediate morbidity, injures also predispose to early onset osteoarthritis[89]. They result in a loss in training days, diminished performance, and dropping out of sport participation[90,91]. The socio-economic impact of exercise-related injuries is also tremendous. Exercise-induced injuries also increase absenteeism from work, disability, and overall, an increase in health care costs[92].

Diet and Trauma

A proper diet is essential for good health. Ideally, the diet should be plant-based, rich in fruits, vegetables, whole grains, nuts, fish, unsaturated oils, with occasional lean meat intake and low in sugar, salt, saturated fats, red meat (both processed and unprocessed), and avoids trans fats and sugar-sweetened drinks. Coffee, tea. and low to moderate intake of alcohol are also beneficial. The diet should contain proper proportions of macronutrients (carbohydrates, proteins, and fats) and micronutrients (vitamins, minerals, and other beneficial trace elements), and provide sufficient hydration[93].

Comment [A8]: Cite the source of this information.

Most data on the relationship between nutrition and trauma deals with the role of nutrition in helping heal trauma and trauma-induced difficulty in adhering to proper nutrition. The data on nutrition being causally related to trauma is scarce. Some data is emerging that consuming fast food, such as burgers, sausage rolls, and biscuits or imbibing excessive sugar-sweetened soft drinks — is linked to riskier behavior behind the wheel[94]. It is presumed that junk food diets and unhealthy snacks contribute to fatigue – which can lead to dangerous driving. It is well known that excessive caloric intake may lead to obesity and obesity's relationship with trauma has been discussed before. Undernutrition (hypoalbuminemia) is associated with increased risk of trauma[95-97], delayed wound healing[98]. and increased wound complications[99-101]. Deficiencies in prealbumin, and vitamins C, vitamin D, and zinc are common in orthopedic trauma patients[95,102].

Transferrin, another indicator of malnutrition, is also deficient in a significant number of patients (48.5%) suffering from wound complications following arthroplasty[103].

Alcohol and Trauma

Alcohol consumption is common worldwide[104]. It is beneficial for several diseases – so long it is consumed in low to moderate amounts[105]. Excess alcohol intake however is detrimental and can cause cardiovascular, metabolic, liver, and gastrointestinal problems, cognitive defects, peripheral neuropathy, and psychological disorders[106-108].

Alcohol intake is also strongly related to trauma[109,110]. In countries like the USA, almost 50% of trauma patients have a positive blood alcohol content[111,112]. Furthermore, approximately 10% of the same patients visit the same hospital for a new injury within a year[113]. When reviewing injury-related emergency room visits across 27 countries, it was found that alcohol consumption is involved in 5% and 40% of all presentations[114]. Alcohol's role in disability and death is also significant[115]. Alcohol is responsible for approximately half of all traumatic fatalities in the United States[111,112]. Globally, it is estimated that alcohol-related injuries account for about18% of disability-adjusted life years (DALYs), and 16% of deaths[116]. The economic burden is extremely high - in 2014, the cost of emergency room visits, and in-patient admissions was almost USD 26 billion[117]. In Canada, in 2017, the estimates of hospitalization and surgery costs for alcohol-attributable injuries was almost CAD 1 billion[118]. The high economic impact of alcohol-related injury is also high in low to middle-income countries. In Sri Lanka, alcohol-attributable injury costs exceeded an estimated USD 380 million in 2015[119]. In Latin America, almost 30% of road fatalities are attributable to alcohol[120], imparting an extremely high economic burden[121].

Among all alcohol-attributable injuries, road injuries are extremely high[109]. Alcohol-impaired drivers, besides increasing the risk to themselves, also endanger passengers, pedestrians, and other drivers[122]. Alcohol has been shown to impair driving performance at blood alcohol concentrations as low as 0.02%[123,124] and well before the driver or observers can detect signs of intoxication[125]. Besides motor vehicle operators, alcohol-positive pedestrians and cyclists are also at increased risk of road injury[126,127]. Alcohol intake is also related to other trauma, including falls[128], drowning[129], workplace injuries[130], fire and cold-related injury[131,132], suicide and homicide[133,134], violence[135], sexual assault[136], and intimate partner abuse[137]. In a meta-analysis of five studies, Taylor et al. found a clear dose–response relationship - odds of a fall-related injury increased by 1.15 for each 10 g of alcohol consumed[128]. Several other studies have found similar results. Alcohol intake has also been strongly associated with drowning-related injuries and deaths. Hamilton et al. reported that in their systemic review, around one-third of all drowning-related injuries and around half of all drowning deaths involved alcohol[129]. Although the published data is limited, studies show a causal relationship between increased workplace injuries and alcohol intake[130]. Alcohol intake has repeatedly been implicated in the increased risk for residential fire mortality. Bruck et al. found that this was noted in almost half of all house fire fatalities (according to blood alcohol levels)[131]. Acute and chronic heavy alcohol use also plays a major role in serious hypothermia and death by freezing, especially in the elderly[132]. Numerous studies show population-level links between alcohol consumption and suicide rates[133]. Alcohol intake also appears to be related to increased homicides[134]. Alcohol-related violent behavior has

been noted all over the world – such as in the US, Brazil, and Thailand[135,138,139]. Besides non-sexual physical violence, alcohol consumption also increases the risk of both perpetration and victimization of sexual assault[136] and intimate partner violence[137]. Alcohol by itself can cause injuries to the person drinking without any external involvement – aspiration and alcohol poisoning[140,141].

Alcohol is a known neurotoxin and central nervous system depressant[142,143]. Even at low to moderate levels, alcohol has been observed to impair balance, visual focus, attention, reaction time, judgment, and memory[142]. Effects are common at blood/breath alcohol concentrations of 0.05% and higher[143]. Since alcohol consumption in lower- and middle-income countries is on the rise, the morbidity, mortality, and economic burden due to alcohol-related trauma are likely to increase[144].

Conclusion

Unhealthy lifestyles are significantly associated with trauma. Unfortunately, this has increased during the Covid 19 induced restrictions. Because people are confined to home, they are using more tools at home resulting in more hand injuries[145]. Domestic violence[146] and stabbings[147] at home have also increased during COVID. Motorists are speeding more[148] and road traffic collisions to continue despite COVID-19 restrictions[149]. Alcohol consumption has also increased[150]. Studies have shown that stay-at-home directives have resulted in about a 5-pound weight gain of 25% in China and 13% in the USA[151]. The CDC estimates that during March–November 2020, obese persons gained 1.0 - 1.2 pounds per month[152]. Smoking during the pandemic, increased in some due to stress and boredom, while it may have decreased in some smokers, who cut down or quit smoking fearing worse repercussions if they catch COVID 19[153]. Exercise appears to have decreased due to public health restrictions[154]. Samples from different countries show that a 15% step count decrease was seen all over the world: Italy (after 5 days), Spain (9 days), France (12 days), India (14 days), the United States (15 days), the United Kingdom (17 days), Australia (19 days), and Japan (24 days)[155]. The overall reduction in activity appears to be approximately 12%[155]. The quality of diet has also become more unbalanced[156]. While the intake of fresh fruits and vegetable intake has decreased worldwide, consumption of high fat, high sugary foods and snacks have increased[156]. Overall, COVID 19 pandemic has decreased healthy lifestyles, and this appears to have increased traumatic injuries. To conclude, physical trauma is increased in individuals with unhealthy lifestyles.

References

1. Injuries and violence: the facts. World health organization web site.https://www.who.int/violence_injury_prevention/key_facts/en/.
2. Accidents or Unintentional Injuries. CDC. 2019 Centers for Disease Control and Prevention website [Internet]. Available from: https://www.cdc.gov/nchs/fastats/accidental-injury.htm.

Comment [A9]: This should be based on your study findings. You have discussed study findings here instead, apart from your first and last sentences.

Comment [A10]: What do you mean here?

Comment [A11]: Almost every sentence written in this document has been referenced. It is like your own views are missing in the document.

3. Institute for Health Metrics and Evaluation . GBD Results Tool: Global Health Data Exchange. University of Washington; Seattle, WA, USA: 2021. https://www.cdc.gov/injury/wisqars/LeadingCauses.html.
4. National Safety Council, the National Center for Injury Prevention and Control.
5. Vos T., Lim S.S., Abbafati C., Abbas K.M., Abbasi M., et al. Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: A systematic analysis for the Global Burden of Disease Study 2019. Lancet. 2020;396:1204–1222. doi: 10.1016/S0140-6736(20)30925-9.
6. Roth G.A., Abate D., Abate K.H., Abay S.M., Abbafati C., et al. Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017, a systematic analysis for the Global Burden of Disease Study 2017. Lancet. 2018;392:1736–1788. doi: 10.1016/S0140-6736(18)32203-7
7. World Health Organisation . *Preventing Suicide: A Global Imperative.* World Health Organization; Geneva, Switzerland: 2014.
8. Wahl D., Solon-Biet S.M., Cogger V.C., et al. (2019). Aging lifestyle and dementia. Neurobiology of Disease, 130, 104481. doi: 10.1016/j.nbd.2019.104481.
9. Rhee P, Joseph B, Pandit V. Increasing trauma deaths in the United States. Ann Surg. 2014;260:13–21.
10. World Health Organization (WHO). World Health Organization Improving Health trough schools: national and international strategies. Geneva: WHO; 1999.), murders
11. Organização Pan-Americana de Saúde (OPAS). Relatório mundial de Violência e Saúde. Washington: OPAS; 2003.
12. Cost of Injury [Internet]. The American Association for the Surgery of Trauma website. Available from:http://www.aast.org/GeneralInformation/costofinjury.aspx.
13. Li Y, Pan A, Wang DD, Liu X, Dhana K, et al. Impact of Healthy Lifestyle Factors on Life Expectancies in the US Population. Circulation. 2018 Jul 24;138(4):345-355. doi: 10.1161/CIRCULATIONAHA.117.032047.
14. Eriksen M, Mackay J, Schluger N, Islami F, Drope J. The tobacco atlas. 5th ed American Cancer Society, 2015.
15. Invernizzi G, Nardini S, Bettoncelli G, et al. The role of general practitioner in tobacco control: reccomendations for a proper management of the smoking patient. Rassegna di Patologia dell'Apparato Respiratorio. 2002;17:55–70.
16. Jarvis MJ. ABC of smoking cessation: Why people smoke. BMJ: British Medical Journal. 2004; Jan 31;328(7434):277–79.
17. World Health Organization. WHO global report: mortality attributable to tobacco. Geneva: WHO Press; 2012.
18. Wang H, Naghavi M, Allen C, et al. Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980–2015: a systematic analysis for the global burden of disease study 2015. Lancet. 2016;388:1459–1544. doi: 10.1016/S0140-6736(16)31012-1.
19. Elisia, I., Lam, V., Cho, B. et al. The effect of smoking on chronic inflammation, immune function and blood cell composition. Sci Rep 10, 19480 (2020). https://doi.org/10.1038/s41598-020-76556-7

20. Sacks JJ, Nelson DE. Smoking and injuries: an overview. Prev Med 1994;23:515–20; Friedman GD, Tekawa I, Sadler M, et al. Smoking and mortality: the Kaiser Permanente experience. In: Burns DM, Garfinkel L, Samet JM, eds.
21. Changes in cigarette-related disease risks and their implication for prevention and control.National Cancer Institute Monograph 8. Bethesda, Maryland: National Cancer Institute, 1997, 477–99 (NIH Publication No.97-4213).
22. Kaufman KR, Brodine S, Shaffer R. Military training-related injuries: surveillance, research, and prevention. Am J Prev Med 2000;18(suppl 3):54–63.
23. Changes in cigarette-related disease risks and their implication for prevention and control. Published 1997 by National Institutes of Health, National Cancer Institute in [Bethesda, Md.] .
24. Peto R, Lopez AD, Boreham J, et al. Mortality from smoking worldwide. Br Med Bull 1996;52:12–21.
25. US Department of Health and Human Services. Reducing tobacco use: a report of the Surgeon General. Atlanta, Georgia: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2000.
26. Leistikow BN, Martin DC, Jacobs J, et al. Smoking as a risk factor for injury death: a meta-analysis of cohort studies. Prev Med 1998;27:871–8.
27. U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress. A Report of the Surgeon General. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014 [accessed 2015 Aug 17.
28. Ding S, Wang J, Chen K. Estimation of case fatality rate and incident rate of traffic injury in Taiwan – analysis of 4,329 victims at a medical center. J Formosan Med Assoc 1993;92:S76–81.
29. Tsai SP, Cowles SR, Ross CE. Smoking and morbidity frequency in a working population. J Occup Med 1990;32:245–9.
30. Grout P, Cliff KS, Harman ML, et al. Cigarette smoking, road traffic accidents and seat belt usage. Public Health 1983;97:95–101.
31. DiFranza JR, Winters TH, Goldberg RJ, et al. The relationship of smoking to motor vehicle accidents and traffic violations. N Y State J Med 1986;86:464–7.
32. Brison RJ. Risk of automobile accidents in cigarette smokers. Can J Public Health 1990;81:102–6.
33. Busen NH, Modeland V, Kouzekanani K. Adolescent cigarette smoking and health risk behavior. J Pediatr Nurs. 2001;16(3):187–193. doi: 10.1053/jpdn.2001.24182.
34. Dearden KA, Crookston BT, De La Cruz NG, Lindsay GB, Bowden A, Carlston L, Gardner P. Teens in trouble: cigarette use and risky behaviors among private, high school students in La Paz Bolivia. Rev Panam Salud Publica. 2007;22(3):160–168. doi: 10.1590/S1020-49892007000800002

35. Calfee CS, Matthay MA, Eisner MD, Benowitz N, Call M, Pittet JF, Cohen MJ. Active and passive cigarette smoking and acute lung injury after severe blunt trauma. Am J Respir Crit Care Med. 2011;183(12):1660–1665. doi: 10.1164/rccm.201011-1802OC.
36. Sacks JJ, Nelson DE. Smoking and injuries: an overview. Prev Med 1994;23:515–20.
37. Kojayan GG, Grigorian A, Schubl SD, Kuza CM, Dolich M, Bashir R, Nahmias J. The effects of smoking on adolescent trauma patients: a propensity-score-matched analysis. Pediatr Surg Int. 2020 Jun;36(6):743-749. doi: 10.1007/s00383-020-04654-8.
38. Moazed F, Hendrickson C, Nelson M, Conroy A, Cohen MJ, Calfee CS. Platelet aggregation after blunt trauma is associated with the acute respiratory distress syndrome and altered by cigarette smoke exposure. J Trauma Acute Care Surg. 2018;84(2):365–371. doi: 10.1097/TA.0000000000001738.
39. Panzer AR, Lynch SV, Langelier C, Christie JD, McCauley K, et al. Lung microbiota is related to smoking status and to development of acute respiratory distress syndrome in critically Ill trauma patients. Am J Respir Crit Care Med. 2018;197(5):621–631. doi: 10.1164/rccm.201702-0441OC.
40. Calfee CS, Matthay MA, Kangelaris KN, Siew ED, Janz DR, et al. Cigarette smoke exposure and the acute respiratory distress syndrome. Crit Care Med. 2015;43(9):1790–1797. doi: 10.1097/CCM.0000000000001089.
41. Johnston CJ, Rubenfeld GD, Hudson LD. Effect of age on the development of ARDS in trauma patients. Chest. 2003;124(2):653–659. doi: 10.1378/chest.124.2.653.
42. Resnick S, Inaba K, Okoye O, Nosanov L, Grabo D, Benjamin E, Smith J, Demetriades D. Impact of smoking on trauma patients. Ulus Travma Acil Cerrahi Derg. 2014 Jul;20(4):248-52. doi: 10.5505/tjtes.2014.21737.
43. Kojayan GG, Grigorian A, Schubl SD, Kuza CM, Dolich M, Bashir R, Nahmias J. The effects of smoking on adolescent trauma patients: a propensity-score-matched analysis. Pediatr Surg Int. 2020 Jun;36(6):743-749. doi: 10.1007/s00383-020-04654-8.
44. Sommese T, Patterson JC. Acute effects of cigarette smoking withdrawal: a review of the literature. Aviat Space Environ Med 1995;66:164–7.
45. https://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm - accessed October 27, 2021.
46. https://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmi_dis.htm.
47. Hirsch, J., Salans, L. B., Aronne, LJ. (2001) Obesity. Becker, KL eds. Principles and Practice of Endocrinology and Metabolism. 3rd ed. Lippincott, Williams, and Wilkins Philadelphia. 1239–1246.
48. Ross R, Neeland IJ, Yamashita S, et al. Waist circumference as a vital sign in clinical practice: a Consensus Statement from the IAS and ICCR Working Group on Visceral Obesity. Nat Rev Endocrinol. 2020;16(3):177-189. doi:10.1038/s41574-019-0310-7.
49. https://www.ncbi.nlm.nih.gov/mesh?Cmd=DetailsSearch&Term=%22Waist-Hip+Ratio%22%5BMeSH+Terms%5D.
50. Ashwell M, Gunn P, Gibson S. Waist-to-height ratio is a better screening tool than waist circumference and BMI for adult cardiometabolic risk factors: systematic review and meta-analysis. Obes Rev. 2012 Mar;13(3):275-86. doi: 10.1111/j.1467-789X.2011.00952.x.

51. Samet JM. Lung Cancer, Smoking, and Obesity: It's Complicated. J Natl Cancer Inst. 2018 Aug 1;110(8):795-796. doi: 10.1093/jnci/djy019.
52. Osborne Z, Rowitz B, Moore H, Oliphant U, Butler J, Olson M, Aucar J. Obesity in trauma: outcomes and disposition trends. Am J Surg. 2014 Mar;207(3):387-92; discussion 391-2. doi: 10.1016/j.amjsurg.2013.10.013.
53. Kim SJ, Ahn J, Kim HK, Kim JH. Obese children experience more extremity fractures than nonobese children and are significantly more likely to die from traumatic injuries. Acta Paediatr. 2016 Oct;105(10):1152-7. doi: 10.1111/apa.13343.
54. Burrows M. Exercise and bone mineral accrual in children and adolescents. J Sports Sci Med. 2007 Sep 1;6(3):305-12.
55. Ashley P, Gilbert SR. Obesity in Pediatric Trauma. Orthop Clin North Am. 2018 Jul;49(3):335-343. doi: 10.1016/j.ocl.2018.02.007.
56. Witt CE, Arbabi S, Nathens AB, Vavilala MS, Rivara FP. Obesity in pediatric trauma. J Pediatr Surg. 2017;52(4):628-632. doi:10.1016/j.jpedsurg.2016.11.037.
57. Dvorak JE, Lester ELW, Maluso PJ, Tatebe L, Schlanser V, Kaminsky M, Messer T, Dennis AJ, Starr F, Bokhari F. The Obesity Paradox in the Trauma Patient: Normal May not Be Better. World J Surg. 2020 Jun;44(6):1817-1823. doi: 10.1007/s00268-020-05398-1
58. Witt CE, Arbabi S, Nathens AB, Vavilala MS, Rivara FP. Obesity in pediatric trauma. J Pediatr Surg. 2017;52(4):628-632. doi:10.1016/j.jpedsurg.2016.11.037.
59. Turcotte AF, O'Connor S, Morin SN, Gibbs JC, Willie BM, Jean S, Gagnon C. Association between obesity and risk of fracture, bone mineral density and bone quality in adults: A systematic review and meta-analysis. PLoS One. 2021 Jun 8;16(6):e0252487. doi: 10.1371/journal.pone.0252487.
60. Arbabi S, Wahl WL, Hemmila MR, et al. The cushion effect. J Trauma. 2003;54:1090–1093. doi: 10.1097/01.TA.0000064449.11809.48.
61. Stein DM, O'Connor JV, Kufera JA, et al. Risk factors associated with pelvic fractures sustained in motor vehicle collisions involving newer vehicles. J Trauma. 2006;61:21–30. doi: 10.1097/01.ta.0000222646.46868.cb.
62. Wang SC, Bednarski B, Patel S, et al. Increased depth of subcutaneous fat is protective against abdominal injuries in motor vehicle collisions. Annu Proc Assoc Adv Automot Med. 2003;47:545–559.
63. Schott AM, Cormier C, Hans D, et al. How hip and whole-body bone mineral density predict hip fracture in elderly women: the EPIDOS prospective study. Osteoporos Int. 1998;8:247–254. doi: 10.1007/s001980050061.
64. Dvorak JE, Lester ELW, Maluso PJ, et al. The obesity paradox in the trauma patient: normal may not be better. World J Surg. 2020;44:1817–1823. doi: 10.1007/s00268-020-05398-1.
65. Farhat A, Grigorian A, Nguyen NT, et al. Obese trauma patients have increased need for dialysis. Eur J Trauma Emerg Surg. 2020;46:1327–1334. doi: 10.1007/s00068-019-01147-9.

66. Brunner AM, Sadrzadeh H, Feng Y, et al. Association between baseline body mass index and overall survival among patients over age 60 with acute myeloid leukemia. *Am J Hematol.* 2013;88:642–646. doi: 10.1002/ajh.23462.
67. Schlesinger S, Siegert S, Koch M, et al. Postdiagnosis body mass index and risk of mortality in colorectal cancer survivors: a prospective study and meta-analysis. *Cancer Causes Control.* 2014;25:1407–1418. doi: 10.1007/s10552-014-0435-x.
68. Li M, Bu R. Biological support to obesity paradox in renal cell carcinoma: a review. *Urol Int.* 2020;104:837–848. doi: 10.1159/000510245.
69. Romero-Corral A, Montori VM, Somers VK, et al. Association of bodyweight with total mortality and with cardiovascular events in coronary artery disease: a systematic review of cohort studies. *Lancet.* 2006;368:666–678. doi: 10.1016/S0140-6736(06)69251-9.
70. Bijani A, Cumming RG, Hosseini SR, et al. Obesity paradox on the survival of elderly patients with diabetes: an AHAP-based study. *J Diabetes Metab Disord.* 2018;17:45–51. doi: 10.1007/s40200-018-0337-7.
71. American College of Sports Medicine. ACSM's guidelines for exercise testing and prescription: Lippincott Williams & Wilkins; 2013. Caspersen CJ, Powell KE, Christenson GM. Physical activity, exercise, and physical fitness: definitions and dis (tinctions for health-related research. Public Health Rep. 1985;100:126.13,
72. Freese J, Klement RJ, Ruiz-Núñez B, Schwarz S, Lötzerich H. The sedentary (r)evolution: Have we lost our metabolic flexibility?. F1000Res. 2017;6:1787. Published 2017 Oct 2. doi:10.12688/f1000research.12724.2.
73. Tremblay MS, Aubert S, Barnes JD, et al. Sedentary Behavior Research Network (SBRN)—terminology consensus project process and outcome. Int J Behav Nutr Phys Act. 2017;14(1):75.
74. Matthews CE, George SM, Moore SC, et al. Amount of time spent in sedentary behaviors and cause-specific mortality in US adults. Am J Clin Nutr. 2012;95(2):437-445. doi:10.3945/ajcn.111.019620.
75. Dasso NA. How is exercise different from physical activity? A concept analysis. Nurs Forum. 2019 Jan;54(1):45-52. doi: 10.1111/nuf.12296.
76. Warburton D.E.R., Bredin S.S.D. Reflections on Physical Activity and Health: What Should We Recommend? Can J Cardiol. 2016;32:495–504. doi: 10.1016/j.cjca.2016.01.024.
77. https://www.who.int/news-room/fact-sheets/detail/physical-activity.
78. Taimela S, Kujala UM, Osterman K. Intrinsic risk factors and athletic injuries. Sports Med. 1990 Apr;9(4):205-15. doi: 10.2165/00007256-199009040-00002.
79. Jones BH, Cowan DN, Knapik JJ. Exercise, training and injuries. Sports Med. 1994 Sep;18(3):202-14. doi: 10.2165/00007256-199418030-00005.
80. van Gent R.N., Siem D., van Middelkoop M., van Os A.G., Bierma-Zeinstra S.M., Koes B.W. Incidence and determinants of lower extremity running injuries in long distance runners: A systematic review. Br. J. Sports Med. 2007;41:469–480. doi: 10.1136/bjsm.2006.033548.

81. Kluitenberg B, van Middelkoop M, Diercks R, van der Worp H. What are the differences in injury proportions between different populations of runners? A systematic review and meta-analysis. Sports Med. 2015;45(8):1143–1161.
82. https://www.aafp.org/afp/2018/0415/afp20180415p510.pdf.
83. Wayne PM, Berkowitz DL, Litrownik DE, Buring JE, Yeh GY. What do we really know about the safety of tai chi?: A systematic review of adverse event reports in randomized trials. Arch Phys Med Rehabil. 2014;95(12):2470-2483. doi:10.1016/j.apmr.2014.05.005.
84. Telles S, Sharma SK, Chetry D, Balkrishna A. Benefits and adverse effects associated with yoga practice: A cross-sectional survey from India. Complement Ther Med. 2021 Mar;57:102644. doi: 10.1016/j.ctim.2020.102644.
85. Ryu S, Lee TK. Biomechanical Parameters that May Influence Lower Limb Injury during Landing in Taekwondo. Medicina (Kaunas). 2021 Apr 12;57(4):373. doi: 10.3390/medicina57040373.
86. Sohl P, Bowling A. Injuries to dancers. Prevalence, treatment and prevention. Sports Med. 1990 May;9(5):317-22. doi: 10.2165/00007256-199009050-00006.
87. Boltz AJ, Robison HJ, Morris SN, D'Alonzo BA, Collins CL, Chandran A. Epidemiology of Injuries in National Collegiate Athletic Association Men's Swimming and Diving: 2014-2015 Through 2018-2019. J Athl Train. 2021 Jul 1;56(7):719-726. doi: 10.4085/1062-6050-703-20.
88. Jackson WT, Starling AJ. Concussion Evaluation and Management. Med Clin North Am. 2019 Mar;103(2):251-261. doi: 10.1016/j.mcna.2018.10.005.
89. Hespanhol L.C., Jr., van Mechelen W., Verhagen E. Health and Economic Burden of Running-Related Injuries in Dutch Trailrunners: A Prospective Cohort Study. Sports Med. 2017;47:367–377. doi: 10.1007/s40279-016-0551-8.
90. Gleeson M., Pyne D.B. Respiratory inflammation and infections in high-performance athletes. Immunol. Cell Biol. 2016;94:124–131. doi: 10.1038/icb.2015.100.
91. Saragiotto B.T., Yamato T.P., Lopes A.D. What do recreational runners think about risk factors for running injuries? A descriptive study of their beliefs and opinions. J. Orthop. Sports Phys. Ther. 2014;44:733–738. doi: 10.2519/jospt.2014.5710.
92. Robinson LS, Brown T, O'Brien L. Profile and cost of sport and exercise-related hand and wrist injuries with Emergency Department presentation. J Sci Med Sport. 2020 Aug;23(8):683-689. doi: 10.1016/j.jsams.2020.01.007.
93. Locke A, Schneiderhan J, Zick SM. Diets for Health: Goals and Guidelines. Am Fam Physician. 2018 Jun 1;97(11):721-728.
94. https://www.studyfinds.org/diet-car-accidents-driving/.
95. Handcox JE, Gutierrez-Naranjo JM, Salazar LM, Bullock TS, Griffin LP, Zelle BA. Nutrition and Vitamin Deficiencies Are Common in Orthopaedic Trauma Patients. J Clin Med. 2021 Oct 28;10(21):5012. doi: 10.3390/jcm10215012.
96. Egbert R.C., Bouck T.T., Gupte N.N., Pena M.M., Dang K.H., Ornell S.S., Zelle B.A. Hypoalbuminemia and Obesity in Orthopaedic Trauma Patients: Body Mass Index a Significant Predictor of Surgical Site Complications. Sci. Rep. 2020;10:1953. doi: 10.1038/s41598-020-58987-4.

97. Wilson J., Lunati M., Grabel Z., Staley C., Schwartz A., Schenker M. Hypoalbuminemia Is an Independent Risk Factor for 30-Day Mortality, Postoperative Complications, Readmission, and Reoperation in the Operative Lower Extremity Orthopaedic Trauma Patient. J. Orthop. Trauma. 2019;33:284–291. doi: 10.1097/BOT.0000000000001448.
98. Tempel Z., Grandhi R., Maserati M., Panczykowski D., Ochoa J., Russavage J., Okonkwo D. Prealbumin as a serum biomarker of impaired perioperative nutritional status and risk for surgical site infection after spine surgery. J. Neurol. Surg. Part A Cent. Eur. Neurosurg. 2015;76:139–143.
99. He Z., Zhou K., Tang K., Quan Z., Liu S., Su B. Perioperative hypoalbuminemia is a risk factor for wound complications following posterior lumbar interbody fusion. J. Orthop. Surg. Res. 2020;15:538. doi: 10.1186/s13018-020-02051-4.
100. Cross M., Yi P., Thomas C., Garcia J., Della Valle C. Evaluation of Malnutrition in Orthopaedic Surgery. JAAOS. 2014;22:193–199. doi: 10.5435/JAAOS-22-03-193.
101. Handcox JE, Gutierrez-Naranjo JM, Salazar LM, Bullock TS, Griffin LP, Zelle BA. Nutrition and Vitamin Deficiencies Are Common in Orthopaedic Trauma Patients. J Clin Med. 2021 Oct 28;10(21):5012. doi: 10.3390/jcm10215012.
102. Zellner B., Dawson J., Reichel L., Schaefer K., Britt J., Hillin C., Reitman C. Prospective Nutritional Analysis of a Diverse Trauma Population Demonstrates Substantial Hypovitaminosis D. J. Orthop. Trauma. 2014;28:e210–e215. doi: 10.1097/BOT.0000000000000053.
103. Roche M., Law T.Y., Kurowicki J., Sodhi N., Rosas S., et al. Albumin, Prealbumin, and Transferrin May Be Predictive of Wound Complications following Total Knee Arthroplasty. J. Knee Surg. 2018;31:946–951. doi: 10.1055/s-0038-1672122.
104. https://www.who.int/substance_abuse/facts/alcohol/en/ - accessed March 3, 2021/
105. Suliga E, Kozieł D, Ciesla E, Rebak D, Głuszek-Osuch M, et al. The Consumption of Alcoholic Beverages and the Prevalence of Cardiovascular Diseases in Men and Women: A Cross-Sectional Study. Nutrients. 2019 Jun 12;11(6):1318. doi: 10.3390/nu11061318.
106. Kozela M, Doryńska A, Bobak M, Pająk A. Alcohol use disorder increases the risk of nonfatal and fatal cardiovascular disease: an 11-year follow-up of a Polish population-based cohort. The HAPIEE study. Pol Arch Intern Med. 2020 Nov 30;130(11):960-966. doi: 10.20452/pamw.15616.
107. Engler PA, Ramsey SE, Smith RJ. Alcohol use of diabetes patients: the need for assessment and intervention. Acta Diabetol. 2013 Apr;50(2):93-9. doi: 10.1007/s00592-010-0200-x.
108. Rocco A, Compare D, Angrisani D, Sanduzzi Zamparelli M, Nardone G. Alcoholic disease: liver and beyond. World J Gastroenterol. 2014 Oct 28;20(40):14652-9. doi: 10.3748/wjg.v20.i40.14652.
109. Chikritzhs T, Livingston M. Alcohol and the Risk of Injury. Nutrients. 2021;13(8):2777. Published 2021 Aug 13. doi:10.3390/nu13082777.
110. Institute for Health Metrics and Evaluation . GBD Results Tool: Global Health Data Exchange. University of Washington; Seattle, WA, USA: 2021.

111. American College of Surgeons. (2016) National Trauma Databank 2016 Annual Report. Available from: https://www.facs.org/-/media/files/quality-programs/trauma/ntdb/ntdb-annual-report-2016.ashx .
112. American College of Surgeons Committee on Trauma Alcohol and Injury Presented by the Subcommittee on Injury Prevention and Control. Available from: https://www.facs.org/~/media/files/quality programs/trauma/alcoholinjury.ashx.
113. Plackett TP, Ton-That HH, Mueller J, Grimley KM, Kovacs EJ, Esposito TJ. Screening for at-risk drinking behavior in trauma patients. J Am Osteopath Assoc. 2015;115:376–82.
114. Ye Y., Shield K., Cherpitel C.J., Manthey J., Korcha R., Rehm J. Estimating alcohol-attributable fractions for injuries based on data from emergency department and observational studies: A comparison of two methods. Addiction. 2018;114:462–470. doi: 10.1111/add.14477.
115. Hoonpongsimanont W, Ghanem G, Chen Y, Sahota PK, Carroll C, Barrios C, Lotfipour S. Underreporting of alcohol use in trauma patients: A retrospective analysis. Subst Abus. 2021;42(2):192-196. doi: 10.1080/08897077.2019.1671936.
116. Institute for Health Metrics and Evaluation. GBD Results Tool: Global Health Data Exchange. University of Washington; Seattle, WA, USA: 2021.
117. White A.M., Slater M.E., Ng G., Hingson R., Breslow R. Trends in Alcohol-Related Emergency Department Visits in the United States: Results from the Nationwide Emergency Department Sample, 2006 to 2014. Alcohol. Clin. Exp. Res. 2018;42:352–359. doi: 10.1111/acer.13559.
118. Canadian Substance Use Costs and Harms Scientific WORKING Group Canadian Substance Use Costs and Harms Visualization Tool, Version 2.0.0 [Online Tool] [(accessed on 25 June 2021)];2020 Available online: https://csuch.ca/ex, plore-the-data//.
119. Ranaweera S., Amarasinghe H., Chandraratne N., Thavorncharoensap M., Ranasinghe T., et al. Economic costs of alcohol use in Sri Lanka. PLoS ONE. 2018;13:e0198640. doi: 10.1371/journal.pone.0198640.
120. World Health Organisation . The Global Health Observatory—Regional Prevalence, Aafs (15+), Road Traffic Crash Deaths. World Health Organisation; Geneva, Switzerland: 2021.
121. Lefio A., Bachelet V.C., Jiménez-Paneque R., Gomolan P., Rivas K. A systematic review of the effectiveness of interventions to reduce motor vehicle crashes and their injuries among the general and working populations. Rev. Panam. Salud Públ. 2018;42:1–8. doi: 10.2o6633/RPSP.2018.60.
122. Quinlan K., Shults R.A., Rudd R.A. Child Passenger Deaths Involving Alcohol-Impaired Drivers. Pediatrics. 2014;133:966–972. doi: 10.1542/peds.2013-2318.
123. Lira M.C., Sarda V., Heeren T.C., Miller M., Naimi T.S. Alcohol Policies and Motor Vehicle Crash Deaths Involving Blood Alcohol Concentrations Below 0.08% Am. J. Prev. Med. 2020;58:622–629. doi: 10.1016/j.amepre.2019.12.015.
124. Zador P.L., Krawchuk S.A., Voas R.B. Alcohol-related relative risk of driver fatalities and driver involvement in fatal crashes in relation to driver age and gender: An

update using 1996 data. J. Stud. Alcohol. 2000;61:387–395. doi: 10.15288/jsa.2000.61.387.
125. Kerr W.C., Greenfield T.K., Midanik L.T. How many drinks does it take you to feel drunk? Trends and predictors for subjective drunkenness. Addiction. 2006;101:1428–1437. doi: 10.1111/j.1360-0443.2006.01533.x.
126. Lasota D., Goniewicz M., Kosson D., Ochal A., Krajewski P., et al. The effect of ethyl alcohol on the severity of injuries in fatal pedestrian victims of traffic crashes. PLoS ONE. 2019;14:e0221749. doi: 10.1371/journal.pone.0221749.
127. Harada M.Y., Gangi A., Ko A., Liou D.Z., Barmparas G., Li T., Hotz H., Stewart D., Ley E.J. Bicycle trauma and alcohol intoxication. Int. J. Surg. 2015;24:14–19. doi: 10.1016/j.ijsu.2015.10.013.
128. Kool B., Ameratunga S., Jackson R. The role of alcohol in unintentional falls among young and middle-aged adults: A systematic review of epidemiological studies. Inj. Prev. 2009;15:341–347. doi: 10.1136/ip.2008.021303.
129. Hamilton K., Keech J.J., Peden A.E., Hagger M.S. Alcohol use, aquatic injury, and unintentional drowning: A system-atic literature review. Drug Alcohol Rev. 2018;37:752–773. doi: 10.1111/dar.12817.
130. McNeilly B., Ibrahim J., Bugeja L., Ozanne-Smith J. The prevalence of work-related deaths associated with alcohol and drugs in Victoria, Australia, 2001–2006. Inj. Prev. 2010;16:423–428. doi: 10.1136/ip.2010.027052.
131. Bruck D., Ball M., Thomas I.R. Fire fatality and alcohol intake: Analysis of key risk factors. J. Stud. Alcohol Drugs. 2011;72:731–736. doi: 10.15288/jsad.2011.72.731
132. Schreurs C.J., Van Hoof J.J., Van Der Lely N. Hypothermia and acute alcohol intoxication in Dutch adolescents: The relationship between core and outdoor temperatures. J. Subst. Use. 2016;22:449–453. doi: 10.1080/14659891.2016.1235733.
133. Norstrøm T.-A., Rossow I. Alcohol Consumption as a Risk Factor for Suicidal Behavior: A Systematic Review of Associations at the Individual and at the Population Level. Arch. Suicide Res. 2016;20:489–506. doi: 10.1080/13811118.2016.1158678.
134. Ramstedt M. Population drinking and homicide in Australia: A time series analysis of the period 1950–2003. Drug Alcohol Rev. 2011;30:466–472. doi: 10.1111/j.1465-3362.2011.00322.x,
135. Mercado-Crespo MC, Mbah AK. Race and ethnicity, substance use, and physical aggression among U.S. high school students. J Interpers Violence 2013; 28(7):1367-1384.
136. DeCou CR, Skewes MC. Alcohol Consumption, History of Sexual Assault in Adolescence, and Revictimization in a Sample of University Students in the Western United States. J Interpers Violence. 2021 Jan;36(1-2):314-329. doi: 10.1177/0886260517727492.
137. Semahegn A, Mengistie B. Domestic violence against women and associated factors in Ethiopia; systematic review. Reprod Health. 2015 Aug 29;12:78. doi: 10.1186/s12978-015-0072-1.

138. Abdalla RR, Massaro L, Queiroz CMA, Laranjeira R, Caetano R, Madruga CS. Association between drug use and urban violence: Data from the II Brazilian National Alcohol and Drugs Survey (BNADS).
139. Chaveepojnkamjorn W, Pichainarong N. Current drinking and health-risk behaviors among male high school students in Central Thailand. BMC Public Health 2011; 11:233.
140. Roth G.A., Abate D., Abate K.H., Abay S.M., Abbafati C., et al. Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017, a systematic analysis for the Global Burden of Disease Study 2017. Lancet. 2018;392:1736–1788. doi: 10.1016/S0140-6736(18)32203-7.
141. Yoon Y.-H., Stinson F.S., Yi H.-Y., Dufour M.C. Accidental Alcohol Poisoning Mortality in the United States, 1996–1998. Alcohol Res. Health J. Natl. Inst. Alcohol Abus. Alcohol. 2003;27:110–118.
142. Dry M.J., Burns N.R., Nettelbeck T., Farquharson A.L., White J.M. Dose-rmelated effects of alcohol on cognitive functioning. PLoS ONE. 2012;7:e50977. doi: 10.1371/journal.pone.0050977.
143. Dry M.J., Burns N.R., Nettelbeck T., Farquharson A.L., White J.M. Dose-related effects of alcohol on cognitive functioning. PLoS ONE. 2012;7:e50977. doi: 10.1371/journal.pone.0050977.
144. https://www.theguardian.com/society/2019/may/08/world-alcohol-consumption-on-the-rise-as-chinas-thirst-grows.
145. Garude K, et al. Patterns of adult and paediatric hand trauma during the COVID-19 lockdown. J Plast Reconstr Aesthet Surg. 2020 doi: 10.1016/j.bjps.2020.05.087.
146. BBC . (2020). Coronavirus: Domestic Abuse Calls up 25% Since Lockdown, Charity Says. Available at https://www.bbc.co.uk/news/uk-52157620.
147. Campbell AM, et al. An increasing risk of family violence during the Covid-19 pandemic: strengthening community collaborations to save lives. FSI Reports. 2020;2:100089. doi: 10.1016/j.fsir.2020.100089.
148. Data about passengers, travelling to work, casualty rates and employment occupations, produced by Department for Transport. In: Driving and road transport. 2020. https://www.gov.uk/government/statistical-data-sets/tsgb01-modal-comparisons#tables-tsgb0117-to-tsgb0125. Accessed 6 June 2020/.
149. Christey G, Amey J, Campbell A, Smith A. Variation in volumes and characteristics of trauma patients admitted to a level one trauma centre during national level lockdown for COVID-19 in New Zealand. New Engl Med J. 2020;133:81–88.
150. J., Ayer, T., Tapper, E.B., Barbosa, C., Dowd, W. and Chhatwal, J. (2022), Effect of Increased Alcohol Consumption During COVID-19 Pandemic on Alcohol-related Liver Disease: A Modeling Study. Hepatology. Accepted Author Manuscript. https://doi.org/10.1002/hep.32272.
151. Jayawardena R, Misra A. Balanced diet is a major casualty in COVID-19. Diabetes Metab Syndr. 2020;14(5):1085-1086. doi:10.1016/j.dsx.2020.07.001.
152. Lange SJ, Kompaniyets L, Freedman DS, et al. Longidtudinal Trends in Body Mass Index Before and During the COVID-19 Pandemic Among Persons Aged 2–19

Years — United States, 2018–2020. MMWR Morb Mortal Wkly Rep 2021;70:1278–1283. DOI: http://dx.doi.org/10.15585/mmwr.mm7037a3external icon.
153. Rigotti, N.A., Chang, Y., Regan, S. et al. Cigarette Smoking and Risk Perceptions During the COVID-19 Pandemic Reported by Recently Hospitalized Participants in a Smoking Cessation Trial. J GEN INTERN MED 36, 3786–3793 (2021). https://doi.org/10.1007/s11606-021-06913-3.
154. Tison G.H., Avram R., Kuhar P., Abreau S., Marcus G.M., Pletcher M.J., Olgin J.E. Worldwide Effect of COVID-19 on Physical Activity: A Descriptive Study. Ann. Intern. Med. 2020 doi: 10.7326/M20-2665.
155. Fitbit Inc The Impact of Coronavirus On Global Activity [Internet] [(accessed on 13 June 2020)];Fitbit Blog. 2020 Available online: https://blog.fitbit.com/covid-19-global-activity/.
156. Jayawardena R, Misra A. Balanced diet is a major casualty in COVID-19. Diabetes Metab Syndr. 2020;14(5):1085-1086. doi:10.1016/j.dsx.2020.07.001.