Smoking is an important cardiovascular risk factor, however, use of smokeless tobacco has not been well studied. Smokeless tobacco use is high in countries of South and Southeast Asia, Africa and Northern Europe. Meta-analyses of prospective studies of smokeless tobacco users in Europe reported a relative risk for fatal coronary heart disease of 1.13 (confidence intervals 1.06–1.21) and fatal stroke of 1.40 (1.28–1.54) while in Asian countries it was 1.26 (1.12–1.40). Case-control studies reported significantly greater risk for acute coronary events in smokeless tobacco users (odds ratio 2.23, 1.41–3.52), which was lower than smokers (2.89, 2.11–3.96), and subjects who both chewed and smoked, had the greatest risk (4.09, 2.98–5.61). There is a greater prevalence of hypertension and metabolic syndrome in users of smokeless tobacco. Smokeless tobacco use leads to accelerated atherothrombosis similar to smoking. There is an urgent need for public health and clinical interventions to reduce smokeless tobacco addiction.
Smokeless tobacco is consumed in un-burnt forms through chewing or sniffing and contains several carcinogenic compounds. Smokeless tobacco has been associated with oral cancer, hypertension, heart disease and other conditions. Smokeless tobacco may also refer to tobacco dipping, snuff, snus, creamy snuff or tobacco toothpaste, tobacco gum, dissolvable tobacco, topical tobacco paste, tobacco water, herbal smokeless tobacco, etc. Smokeless tobacco use is more prevalent in countries of Asia, Africa and the Middle East than in Europe and the Americas. Data on these forms of tobacco use are not readily available for most parts of the world.

Prevalence of smokeless tobacco use has been studied in high income countries and reports a low prevalence. Behaviour Risk Surveillance System Study reported smokeless tobacco use in USA. The use ranged from 1-9% in different states and was more in younger men with low educational status, and in states with high smoking prevalence. The US Current Population Survey reported a significant decline in smokeless tobacco use from 1992 to 2002. The US National Health Interview Surveys (1991–2003) also reported decline in smokeless tobacco use. Prevalence of smokeless tobacco use has also been reported from European countries. It is almost similar to USA with rates ranging from 1-9% in different countries. The Global Adult Tobacco Survey, 2009 reported that in Russian Federation, 0.6% (0.7 million) of adult population used smokeless tobacco. Prevalence was more among males (1.0%) than among females (0.2%) and higher in urban areas (0.7%) as compared to rural areas (0.3%).

2.1. Middle and low income countries

In contrast to the United States and Western European countries, smokeless tobacco use is high in Northern European and African countries and in Asia. In India, 22% of men and 17% of women use smokeless tobacco, in Sudan 40% of men and 10% women use toombak, a locally brewed smokeless tobacco, and in Sweden among those >16 years of age 21.2% of men and 3.9% women use snus. The WHO Southeast Asian Region is the hub of smokeless tobacco users. It has a history of people using different smokeless tobacco products for centuries. Decades ago, people used only locally made smokeless tobacco products such as betel quid with tobacco. However, in recent times with large-scale production of tobacco, varieties of manufactured products have become widely available to the people in this region. It is home to nearly 250 million smokeless tobacco users. Chewing, sucking and applying tobacco preparations are common ways of using tobacco orally. The simplest form of smokeless tobacco product is a betel quid, where tobacco is added to the betel leaf and areca nut with some slaked lime. It is commonly available and has been in use for many years in Bangladesh, India, Myanmar and Nepal. Prevalence of smokeless tobacco among men in the Southeastern countries ranges from 1.3% in Thailand to 51% in Myanmar. Among women, it ranges from 4.6% in Nepal to 27.9% in Bangladesh. Use of smokeless tobacco products among male students in this region aged 13–15 years ranged from 3.3% in Indonesia to

![Percentage of tobacco use among adults, 2005](image_url)
43.2% in Timor-Leste, and among females from 2.3% in Indonesia to 40.7% in Timor-Leste. Some sub-national surveys show that working children and street children are far more likely to use tobacco than students.1

In India, tobacco consumption is mainly in two forms: smoked tobacco products and smokeless tobacco.13 Most commonly used smokeless tobacco products include – tobacco pan masala, tobacco with lime, tobacco with pan and betel quid. According to a recent report, the prevalence of smokeless tobacco consumption in India is 20%.13 It is significantly higher in males than in females (28% in males and 12% in females), and in rural population as compared to urban population.13 Third National Family Health Survey in India (2005–2006) reported 34% prevalence of chewable smokeless tobacco use in men 15–54 years.14,15 Easy affordability, lesser cost and misconceptions regarding its useful health effects are important contributory factors for increased smokeless tobacco consumption. Tobacco consumption is higher among poor, less educated, scheduled castes and scheduled tribes. Global Adult Tobacco Survey – India report mentions a high use of smokeless tobacco among men and women aged >15 years in India.1 A sample of almost 800,000 men and women was evaluated for habit of tobacco use and data showed that almost a quarter (26%) of all adults in India use smokeless tobacco either by chewing, sniffing or applying to teeth or gums. Use of smokeless tobacco was more prevalent than smoking and was more in men (33%) than in women (18%).1 WHO Global Health Observatory Data Repository has reported prevalence of smokeless tobacco use among adults in 2008 (Table 1).16 The use is significantly greater among men than in women in almost all the countries. Prevalence is greater in low income countries. There are limited studies in Africa. A study in Nigeria reported 7.5% prevalence of smokeless tobacco use with the most common form being snuff.17

Smokeless tobacco use is an important health issue among children and youth in low income countries. Global school based health surveys in the year 2006 among 44 countries across 110 sites reported a substantial variation in non-cigarette forms of tobacco use, which include smokeless tobacco from a low of 1.0% in China to 43.7% in Northwest Namibia.18 Global Tobacco Surveillance System reported patterns of tobacco use among nearly 750,000 youth, aged 13–15 years at more than 10,000 schools and 395 sites in 131 countries.19 The use of non-cigarette forms of tobacco use, which include smokeless tobacco (11.2%), was more than smoking (8.9%). The rates were the highest in Southeast Asia (13.3%) and the Eastern Mediterranean region (12.9%) and were less than 10% in the Western Pacific and European regions.19 Anecdotal evidence suggests that smokeless tobacco use, among the youth has increased exponentially in India (Table 2).20 Project MYTRI, a cross-sectional study conducted in India (Delhi and Chennai), reported higher levels of smokeless tobacco use among 6th grade students than 8th graders. This suggested increased tobacco use among younger children in India.21

Trends in prevalence of smokeless tobacco use have not been well studied in low income countries. In India, the National Family Health Surveys from 1992 to 2006 did not report significant changes in smoking or smokeless tobacco use.22 A study among urban subjects in Northwest India reported declining trends in smoking among men and women over a 20-year-period (1991–2010) but trends in smokeless tobacco use were not reported.23

3. Smokeless tobacco and cardiovascular disease

There are several adverse health effects attributable to smokeless tobacco.24–26 Similar to smoked tobacco, the smokeless tobacco also contains nicotine, a chemical with addicting properties. Unfortunately, people are not aware of the addiction potential of smokeless and other forms of tobacco. They are also unable to stop its use once addicted because of unpleasant withdrawal symptoms. Smokeless and other tobacco products are known to cause oral, pancreatic, pharyngeal, esophageal and stomach cancers.27 Some studies also show that smokeless tobacco users die of CVD and other circulatory diseases.24 Low birthweight and stillbirths are two major adverse reproductive outcomes found in association with its use in pregnancy.27

Association of smokeless tobacco consumption with occurrence of adverse cardiovascular events like myocardial infarction, stroke, and ischemic heart disease has been studied in detail in western population.24 Results from these studies paint a mixed picture with some showing increased incidence of these events while others showing no such association. Similarly, contradictory results have been seen in studies evaluating increased risk factors for CVD in smokeless tobacco consuming population.

3.1. Prospective studies

There are limited prospective studies that assessed role of smokeless tobacco on CVD outcomes or mortality.24 Most of these studies have been performed in Northern Europe. Results on the risk for myocardial infarction or stroke have

---

### Table 1 – Smokeless tobacco use among adults in selected countries according to WHO Global Health Observatory Data Repository (2008) and Global Adult Tobacco Survey India (2010).11,22

<table>
<thead>
<tr>
<th>Country</th>
<th>Men (%)</th>
<th>Women (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High income countries</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>1.9</td>
<td>0.5</td>
<td>1.2</td>
</tr>
<tr>
<td>Sweden</td>
<td>7.0</td>
<td>3.0</td>
<td>4.0</td>
</tr>
<tr>
<td><strong>Middle income countries</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>0.5</td>
<td>3.1</td>
<td>0.6</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>22.5</td>
<td>0.4</td>
<td>11.3</td>
</tr>
<tr>
<td>South Africa</td>
<td>2.4</td>
<td>10.9</td>
<td>6.2</td>
</tr>
<tr>
<td>Yemen</td>
<td>15.1</td>
<td>6.2</td>
<td>10.7</td>
</tr>
<tr>
<td><strong>Low-middle/low income countries</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bangladesh</td>
<td>14.8</td>
<td>24.4</td>
<td>19.7</td>
</tr>
<tr>
<td>Cambodia</td>
<td>17.0</td>
<td>1.0</td>
<td>10.1</td>
</tr>
<tr>
<td>India</td>
<td>32.9</td>
<td>18.4</td>
<td>25.8</td>
</tr>
<tr>
<td>Nepal</td>
<td>31.2</td>
<td>4.6</td>
<td>18.6</td>
</tr>
</tbody>
</table>
provided conflicting evidence. Critchley and Unal performed a meta-analysis of studies of association of smokeless tobacco use and CVD. Very few studies were identified; only three from Sweden considered CVD outcomes and the results were discrepant. There was a modest association between the use of Swedish snuff (snus) and CVD (relative risk 1.4, 95% confidence interval 1.2–1.6 in one prospective cohort study). Several other studies have considered associations between smokeless tobacco use and intermediate outcomes (CVD risk factors). It was concluded that there may be an association between smokeless tobacco use and CVD, however, further rigorous studies with adequate sample sizes were required.

Boffetta and Straif also performed a meta-analysis of these studies. In all, eight studies that evaluated risk of fatal myocardial infarction and five studies that evaluated fatal stroke were analyzed. Three studies showed increased risk for cardiovascular deaths (fatal myocardial infarction and stroke) when compared to non-smokers, while others did not show any significant difference in outcomes. The summary odds ratio (OR) statistic and 95% confidence intervals (CI) show greater risk of fatal myocardial infarction (OR 1.13, 95% CI 1.06–1.21) and fatal stroke (OR 1.40, 95% CI 1.28–1.54). A population based prospective study in Sweden reported that among snuff users the risk of myocardial infarction (OR 0.82, 95% CI 0.46–1.43) or sudden cardiac death (OR 1.18, 95% CI 0.38–3.70) was not significant.

Studies in low and middle income countries of Asia and Africa have been few. Gupta et al performed a prospective study involving about 100,000 men and women in Mumbai, India. At follow-up of five years, relative risk of fatal cardiovascular event among male users of smokeless tobacco was not significantly different from non-tobacco users. In women, smokeless tobacco use was associated with significantly greater risk of cardiovascular mortality. Zhang et al performed a meta-analysis of studies on association of smokeless tobacco use and cardiovascular outcomes in Asia. Studies from China, Taiwan and India were included. The study reported insignificant association of tobacco use and cardiovascular mortality in India but the relationship was significant in studies in China and Taiwan. The summary odds ratio was 1.26 (95% CI 1.12–1.40), which indicated moderate risk of cardiovascular death with smokeless tobacco use. Thus, use of smokeless tobacco (with snuff being the most studied variant) involves a much lower risk for adverse cardiovascular effects than smoking.

### Table 2 – Non-cigarette forms of tobacco use which include smokeless tobacco among adolescents in Global Youth Tobacco Survey – 1999–2005 (Percent, 95% confidence intervals).25

<table>
<thead>
<tr>
<th>Region</th>
<th>Total (Percent)</th>
<th>Boys (Percent)</th>
<th>Girls (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>11.2 (9.7–12.7)</td>
<td>13.8 (11.7–15.9)</td>
<td>7.8 (6.0–9.6)</td>
</tr>
<tr>
<td>African region</td>
<td>10.5 (8.3–12.7)</td>
<td>10.9 (8.0–13.8)</td>
<td>9.9 (7.3–12.5)</td>
</tr>
<tr>
<td>Americas region</td>
<td>11.3 (9.8–12.8)</td>
<td>14.8 (12.6–17.0)</td>
<td>7.8 (6.2–9.4)</td>
</tr>
<tr>
<td>Eastern Mediterranean region</td>
<td>12.9 (10.6–15.2)</td>
<td>15.6 (12.4–18.8)</td>
<td>9.9 (7.3–12.5)</td>
</tr>
<tr>
<td>European region</td>
<td>8.1 (5.8–10.4)</td>
<td>10.0 (6.7–13.3)</td>
<td>6.0 (4.0–8.0)</td>
</tr>
<tr>
<td>Southeastern Asian region</td>
<td>13.3 (12.3–14.3)</td>
<td>16.4 (15.0–17.8)</td>
<td>8.4 (6.8–10.0)</td>
</tr>
<tr>
<td>Western Pacific region</td>
<td>6.4 (5.2–7.6)</td>
<td>7.7 (6.1–9.3)</td>
<td>5.4 (3.9–6.9)</td>
</tr>
</tbody>
</table>

### 3.2. Association studies

There are limited case-control studies that evaluated cardiovascular risks in smokeless tobacco users as compared to non-users. Two case-control studies from Sweden showed the same cardiovascular risks among smokeless tobacco users as in non-tobacco users. The odds ratios for all and fatal myocardial infarction remained non-significant after adjustments for various potential confounders.

INTERHEART study evaluated 27,089 participants for association of cardiovascular risk factors with acute myocardial infarction in 52 countries (12,461 cases, 14,637 controls). Relationship between risk of myocardial infarction with current or former smoking, type of tobacco, smokeless tobacco use and exposure to second hand tobacco smoke was determined. Current smoking was associated with a greater risk of non-fatal myocardial infarction (OR 2.95, 95% CI 2.77–3.14) compared with never smoking. Smoking beedies alone (indigenous to South Asia) was associated with increased risk (OR 2.89, 95% CI 2.11–3.96) similar to that associated with cigarette smoking. Chewing tobacco alone was associated with OR 2.23 (95% CI 1.41–3.52), and smokers who also chewed tobacco had the highest risk (OR 4.09, 95% CI 2.98–5.61) of acute myocardial infarction. Similar results have been reported by smaller case-control studies.

### 4. Smokeless tobacco and cardiovascular risk factors

In high income countries, there have been studies to determine association of smokeless tobacco use and cardiovascular risk factors. Older studies among young Swedish snuff-using subjects or US professional baseball players did not report any significant association. A study among 58-year old men reported significantly greater waist-size, triglycerides and other manifestation of dysmetabolic syndrome in smokeless tobacco users. This was confirmed in a prospective Swedish study, which showed that over a period of 10 years, high dose consumption of snus was associated with development of metabolic syndrome (OR 1.6, 95% CI 1.26–2.15).

Prospective studies that evaluated development of other cardiovascular risk factors have also been performed. Hergens et al performed a cohort study with 15 year follow-up of a
Swedish national sample of male construction workers. Blood pressure (BP) was measured at baseline and at follow-up. As compared to non users ($n = 4815$), men who used snuff regularly ($n = 1010$) had an increased relative risk of hypertension of 1.43 (95% CI 1.12–1.83). In a population based cross-sectional study of >30,000 participants in Sweden, smokeless tobacco users were 1.8 times (95% CI 1.5–2.1) more likely to have a diastolic BP reading more than 90 mmHg and 1.7 times (95% CI 1.3–2.1) more likely to have a systolic BP > 160 mmHg.

Several studies in Sweden have examined the effect of smokeless tobacco products on serum lipids. No significant effects were found in levels of total cholesterol and HDL cholesterol among snuff users compared to controls in these populations. On the other hand, Tucker et al from a large population based study reported that subjects who used smokeless tobacco had 2.5 times greater prevalence of

**Fig. 2** - Smokeless tobacco use and risk of fatal myocardial infarction (upper graph) or fatal stroke (lower graph) in high income countries. Summary meta-analysis odds ratio statistic and 95% confidence intervals (CI) show greater risk of fatal stroke (1.40, CI 1.28–1.54) as compared to fatal myocardial infarction (1.13, CI 1.06–1.21). Data source: Boffetta & Straif. BMJ, 2009.

**Fig. 3** - Smoking, smokeless tobacco use and cardiovascular mortality in India: Mumbai Cohort Study. Smokeless tobacco use in women is significantly associated with cardiovascular mortality (relative risk 1.19, 95% CI 1.02–1.38) while the association is not significant in men (relative risk 0.94, 95% CI 0.82–1.09). Data source: Gupta, et al. Int J Epidemiol, 2005.

**Fig. 4** - Smokeless tobacco use and cardiovascular mortality in Asian countries. Studies from China, Taiwan and India have reported significant association of tobacco use and cardiovascular mortality in cohort studies. Summary odds ratio (1.26, CI 1.12–1.40) indicates moderate risk. Data source: Zhang, et al. J Zhejiang Univ Sci, 2010.
hypercholesterolemia. Khurana et al reported significantly lower levels of HDL cholesterol and greater levels of LDL cholesterol in Asian Indian subjects who chewed tobacco regularly. In another study of 3128 men, there was a higher prevalence of diabetes among long-term users of smokeless tobacco (OR 2.7, 95% CI 1.3–5.5). Abnormalities of platelet function, oxidative stress and coagulation factors have also been evaluated among smokeless tobacco users. No significant differences have been reported as compared to non-users. To identify cardiovascular risk factors among tobacco chewers, Gupta et al performed a population based case-control study in India. Tobacco chewers had a significantly greater prevalence of resting tachycardia, hypertension, hypercholesterolemia, low HDL cholesterol, hypertriglyceridemia and diabetes compared to non-smokers/non-tobacco users (Fig. 5). The risk factors were similar to smokers (Fig. 5).

Smoking is a well-established CVD risk factor. Cigarette smoking leads to acute coronary thrombosis and chronically produces endothelial dysfunction, hypercoagulability and inflammation, resulting in accelerated atherosclerosis. Smoking also leads to a wide variety of mechanistic disruptions — platelet activation and thrombogenesis, endothelial dysfunction, accelerated atherogenesis, inflammation, sympathoadrenal activation, arrhythmogenesis, insulin resistance and hyperlipidemia — all of which can contribute to CVD. It has been suggested that smokeless tobacco produces vascular damage through similar biological mechanisms. More studies are required to elicit pathophysiological mechanisms of smokeless tobacco on vascular system, thrombosis and atherosclerosis.

5. Public health implications

A concept on implementing state policy on combating tobacco for 2010–2015 was developed by WHO and approved for use in the WHO Framework Convention on Tobacco Control (FCTC) and MPOWER policy package. The features include (i) to continue working on tobacco control awareness programs where all subpopulations have equal access to the activities and information; (ii) public health policy and interventions should cover all types of tobacco products; (iii) periodic monitoring of tobacco use through standard surveys should be continued and integrated into tobacco control action plans and existing health systems to implement the concept of WHO FCTC. Government of India and many state governments have implemented some aspects of FCTC. Tobacco taxation are being raised regularly. A notification of Food Safety and Standards Authority of India has prohibited the use of tobacco and nicotine in any food product. However, indicators for smokeless tobacco were not included in the package. Smokeless tobacco is now exported to many countries and available in local brands. With increased availability of smokeless tobacco products globally, these tobacco control strategies need to be revisited and regulation and control of smokeless tobacco products needs to be emphasized. Regional efforts on curbing smokeless tobacco should be included in the tobacco control policies.

There is also a need to build capacity for programs among healthcare providers and expand cessation services in the national health programs. The following action items have been recommended: (i) strengthen the national health system to provide smoking and non-smoked tobacco use cessation services in primary healthcare facilities; (ii) introduce evidence-based smoking cessation and non-smoked tobacco control approaches and interventions; (iii) formulate a 100% tobacco-free policy for all public places and workplaces to meet the expectations of population; (iv) gradually raise taxes on all types of tobacco products, given the high prevalence of non-smoked tobacco use and the low price of smokeless tobacco products compared to increases in income; (v) expand the national tobacco control act to include smokeless tobacco under the purview of tobacco control at par with all smoking tobacco products with the purpose to prevent the use of smokeless tobacco and any other new tobacco and nicotine products; (vi) continue working with mass media on effective anti-smoking and anti-tobacco use media messages that target specific demographic groups; (vii) further develop the health warnings on tobacco products, as health warnings are one of the most effective methods for encouraging tobacco users to quit; (viii) decrease the number and regulate the type of venues where tobacco products can be sold; and (ix) gradually prohibit tobacco advertising at points of sale, as a high percentage of cigarette smokers and non-smoked tobacco users notice advertisements where they purchase them. At the individual level, whether or not the apparent risk reduction is a useful strategy to help inveterate tobacco users to quit is a matter of debate, as are the public health effects of a high prevalence of smokeless tobacco use in some populations.

The US National Institutes of Health has also recommended strategies for tobacco control and focussed on smokeless tobacco use (Table 3). The key strategies include population-and community-based interventions, increasing consumer demand for cessation treatments, promoting implementation of the existing strategies by healthcare system as well as
communities, control of marketing of smokeless tobacco products, and accelerated public health efforts and promotion of future research. It is essential to integrate worldwide health promotion agencies to support smokeless tobacco control programs. At the population level, tobacco control policies should be integrated into the overall health and development agenda. This should involve integration of tobacco control into broader health and development agenda such as food and water security, environment, the right to education and human rights. Policy and administrative integration of tobacco and other primordial determinants of cardiovascular health (physical activity promotion, alcohol control and promotion of healthy diet) shall encourage a holistic solution to CVD and non-communicable diseases.

### 6. Conclusions

This review shows that smokeless tobacco use is an important public health problem. Prevalence is high in low income countries and the highest in South Asia and Southeastern Asian regions. Prospective studies have reported a significant association of smokeless tobacco use with cardiovascular mortality (coronary heart disease and stroke) as well as acute coronary events. Smokeless tobacco use is associated with increased cardiovascular risk factors such as the metabolic syndrome and diabetes. Mechanistic issues that lead to an increased cardiovascular risk of smokeless tobacco need more studies. There is a need for population- and community-wide policy interventions for smokeless tobacco control. Individual interventions promoting tobacco cessation are important. We recommend a worldwide ban on smokeless tobacco products to attenuate multiple harms, including CVD, associated with its use.

### Conflicts of interest

All authors have none to declare.

### References


---

<table>
<thead>
<tr>
<th>Strategies</th>
<th>Actionable items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population- and community-based interventions</td>
<td>• Increased prices through taxation on tobacco products&lt;br&gt;• Laws and regulations that prevent young people from gaining access to tobacco products&lt;br&gt;• Restrict tobacco advertising&lt;br&gt;• Mass media campaigns&lt;br&gt;• Proactive telephone tobacco cessation support&lt;br&gt;• Healthcare provider advise to stop tobacco use&lt;br&gt;• Educational approaches&lt;br&gt;• Pharmacological therapies, e.g., bupropion&lt;br&gt;• Increase in price of tobacco products&lt;br&gt;• Reducing out-of-pocket costs of cessation therapies&lt;br&gt;• Culturally tailored, gender-specific, language appropriate programs&lt;br&gt;• Healthcare system level interventions for tobacco use cessation&lt;br&gt;• Financial incentives&lt;br&gt;• Health system level educational and organizational approaches&lt;br&gt;• Dedicated staff for tobacco cessation services&lt;br&gt;• Control of availability of these products&lt;br&gt;• Inexpensive pharmacological and behavioral cessation therapies&lt;br&gt;• Tailored multimodal cessation interventions&lt;br&gt;• Proper timing of initiation of interventions&lt;br&gt;• Improve and implement effective interventions&lt;br&gt;• Improve and implement effective policies&lt;br&gt;• Develop new population- and community-based interventions&lt;br&gt;• Smokeless tobacco pathophysiological, behavioral, and intervention research&lt;br&gt;• Infrastructure development</td>
</tr>
<tr>
<td>Increasing consumer demand for proven cessation treatments</td>
<td></td>
</tr>
<tr>
<td>Promoting implementation of strategies by healthcare systems and communities</td>
<td></td>
</tr>
<tr>
<td>Control of marketing of smokeless tobacco products</td>
<td></td>
</tr>
<tr>
<td>Prevention and cessation interventions in populations with co-morbidities and risk behaviors</td>
<td></td>
</tr>
<tr>
<td>Public health efforts and future research</td>
<td></td>
</tr>
</tbody>
</table>

---

Table 3 – Strategies for smokeless tobacco control.
22. Mony P. Geographic Epidemiology of Cardiovascular Disease in India: An Exploratory Study – MSc Thesis. Canada: University of Toronto. Available at: https://space.library.utoronto.ca/handle/1807/18899.


