Health Effects of Smokeless Tobacco (SLT) Product Use

Numerous adverse health consequences, apart from addiction, have been reported with SLT use. However, studies evaluating these effects have been conducted by only a few Parties. Regional differences have been reported for various adverse health effects of SLT.

Oral Cancer

- Significant positive association of SLT with oral cancer demonstrated in studies and meta-analyses from India, Pakistan and Sudan.
- However, studies from Sweden and Norway do not report similar association.

Pharyngeal Cancer

- Significant positive association demonstrated in studies from India.
- However, association not found to be significant in studies from Sweden.

Pancreatic cancer

- Studies reported from Sweden and India with variable results.

Oral precancerous lesions

- Leukoplakia, erythroplakia, verrucuous hyperplasia shown to be associated with SLT use.
- Dose-response relationship also been demonstrated with regression on cessation of habit.

Cardiovascular effects

- Include ischemic heart disease, stroke and other cardiovascular lesions.
- Studies conducted in Sweden, India, Pakistan, Bangladesh, Iran.
- Positive significant association of SLT use reported with fatal myocardial infarction and stroke.
- Results of studies on association of SLT with hypertension demonstrate variable association.

Reproductive effects

- Adverse reproductive effects like still birth, preterm birth, low birth weight reported to be associated with SLT use by the mother.
- Improvement in these outcomes on cessation of SLT use reported by few authors.

Authors	Odds Ratio (95% CI)
Oral Cancer	
Siddiqi K et al 2015	3.43 (2.26-5.19)
Pharyngeal Cancer	
Siddiqi K et al 2015	2.23 (1.55-3.20)
Esophageal Cancer	
Siddiqi K et al 2015	2.17 (1.70-2.78)
Pancreatic Cancer*	
Alguacil & Silverman 2004	1.1 (0.4-3.1)
Boffetta et al 2005	1.60 (1.00-2.55)
Luo et al 2007	2.1 (1.2-3.6)
Hassan et al 2007	0.6 (0.3-1.4) chewing 0.5 (0.1-1.5) snuff
Pednekar 2011	1.95 (0.68-5.54)
Cervical Cancer*	
Simen-Kapeu et al 2009	5.5 (2.1-14)
Stomach Cancer	
Sinha et al 2016	1.31 (0.92-1.87)
Ischemic Heart Disease	
Siddiqi et al 2015	1.13 (0.94-1.36)
Vidyasagaran et al 2016	1.14 (0.92-1.42)
Stroke	
Vidyasagaran et al 2016	1.01 (0.90-1.13)
Diabetes*	
Ostenson et al 2012	3.3 (1.4-8.1)
Carlsson et al 2017	1.15 (1.00-1.32)
Rasouli et al 2017	1.00 (0.47-2.11)
Reproductive effects *	
Low birth weight	
Deshmukh et al 1998	2.49 (1.34-4.61)
Gupta et al 2004	1.61 (1.11-2.35)
Steyn et al 2006	0.90 (0.44-1.82)
Pratinidhi et al 2010	2.40 (1.52-3.80)
Preterm birth	
England et al 2003	1.32 (1.21-1.45)
Gupta et al 2004	1.61 (1.13-2.29)
Pratinidhi et al 2010	1.38 (0.78-2.43)
England et al 2013	1.44 (0.99-2.11)
Stillbirth	
England et al 2003	1.60 (1.15-2.21)
Gupta et al 2004	3.07 (1.67-5.68)
Pratinidhi et al 2010	4.57 (1.13-18.43)

Data from case control or cohort studies since no global meta-analysis is currently available on the topic.

Table 1: Global Data on Smokeless Tobacco Use and Adverse Health Effects

Authors	Odds Ratio (95% CI)
Upper aerodigestive tract cancer	
Sinha et al 2016	2.17 (1.47-3.22)
Stomach cancer	
Sinha et al 2016	1.33 (1.12-1.59)
Cervical cancer	
Sinha et al 2016	2.07 (1.64-2.61)
Ischemic Heart Disease	
Boffetta et al 2009	1.17 (1.09-1.25)
Vidyasgaran et al 2016	1.15 (1.01-1.30)
Sinha et al 2016	1.10 (1.04-1.17)
Stroke	
Boffetta et al 2009	1.44 (1.31-1.59)
Vidyasagaran et al 2016	1.39 (1.29-1.49)
Sinha et al 2016	1.37 (1.24-1.51)

Table 2: Global Data on Association of Smokeless Tobacco Use and Cause-Specific Mortality