

# Smokeless Tobacco Use, Malnutrition, and Poverty in LMICs

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## Disclaimer

The findings and conclusions in this report (presentation) are those of the author/s and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

# Tobacco Control in the Development Agenda

**Tobacco Kills People**

**Tobacco Hurts the Economy and Impedes development**

## The Health Consequences of Smoking—50 Years of Progress

A Report of the Surgeon General

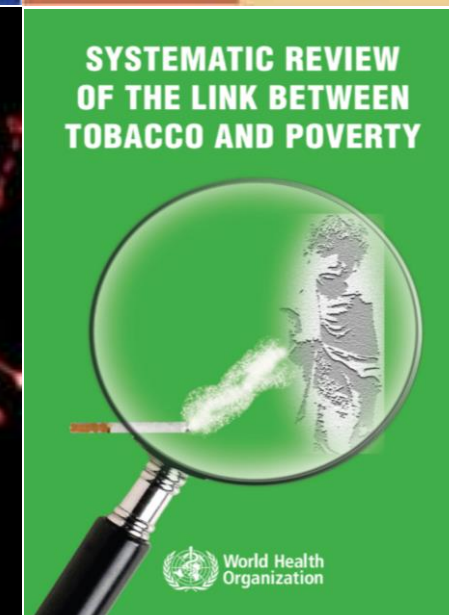
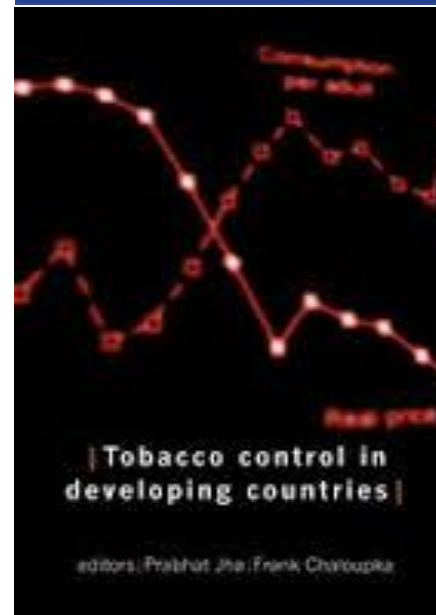
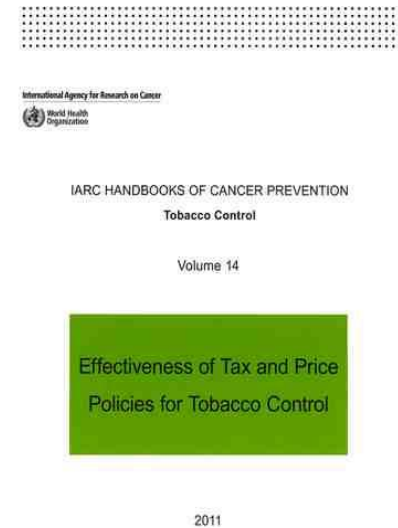
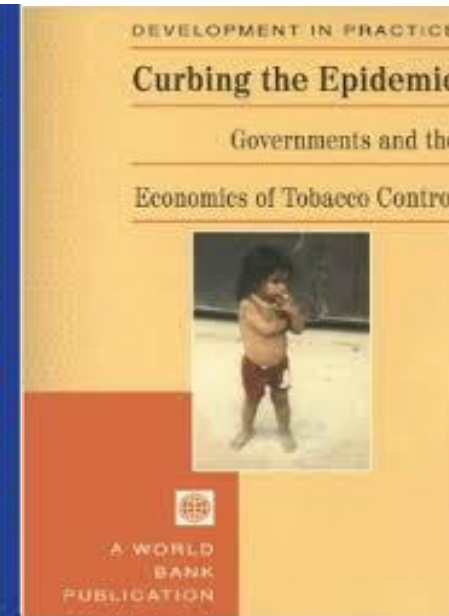
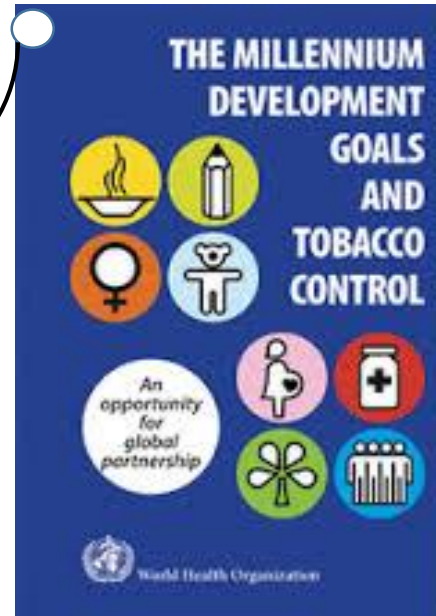


U.S. Department of Health and Human Services

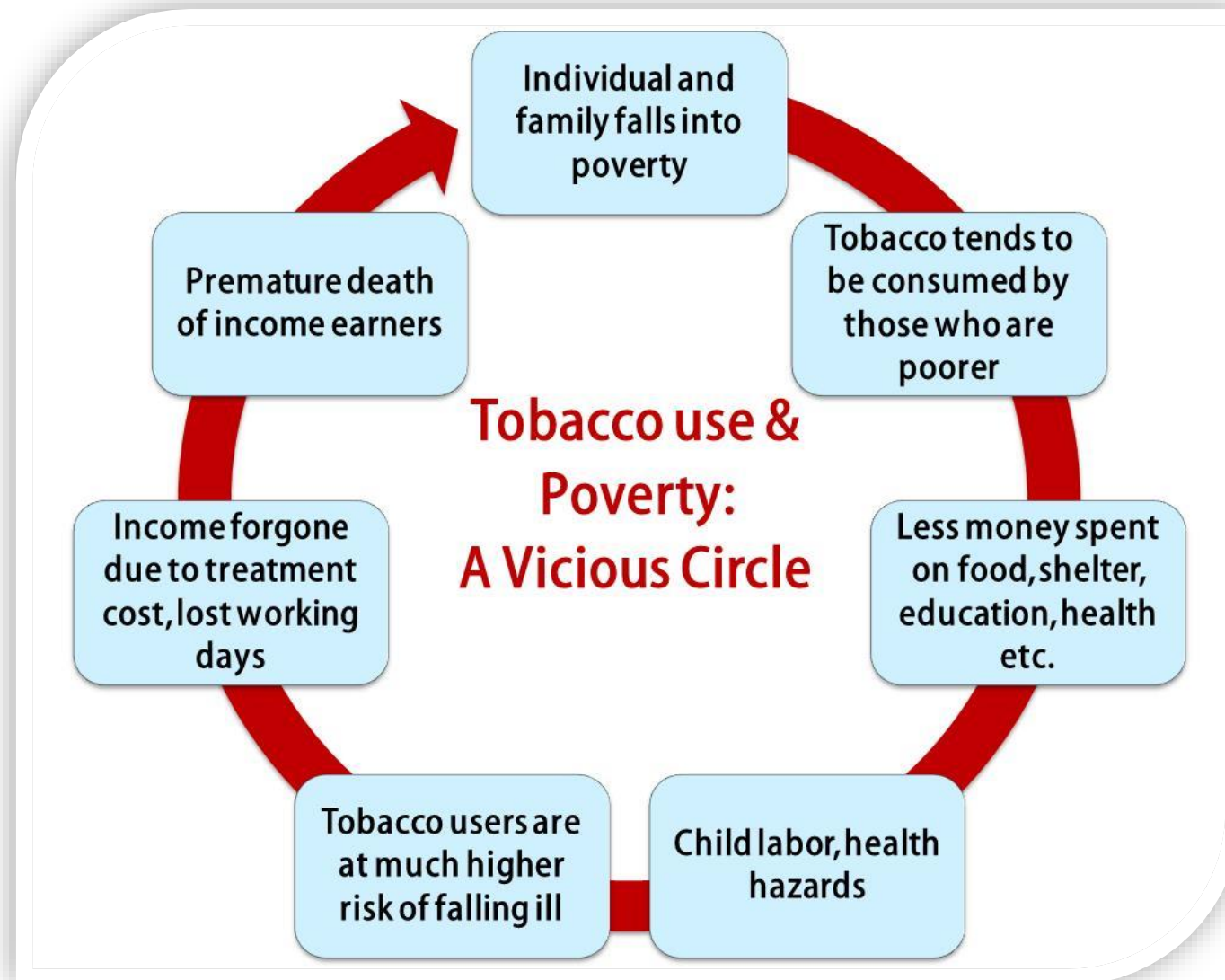
Smokeless tobacco, like chew and dip, can cause **CANCER** of the **MOUTH, ESOPHAGUS, AND PANCREAS.**



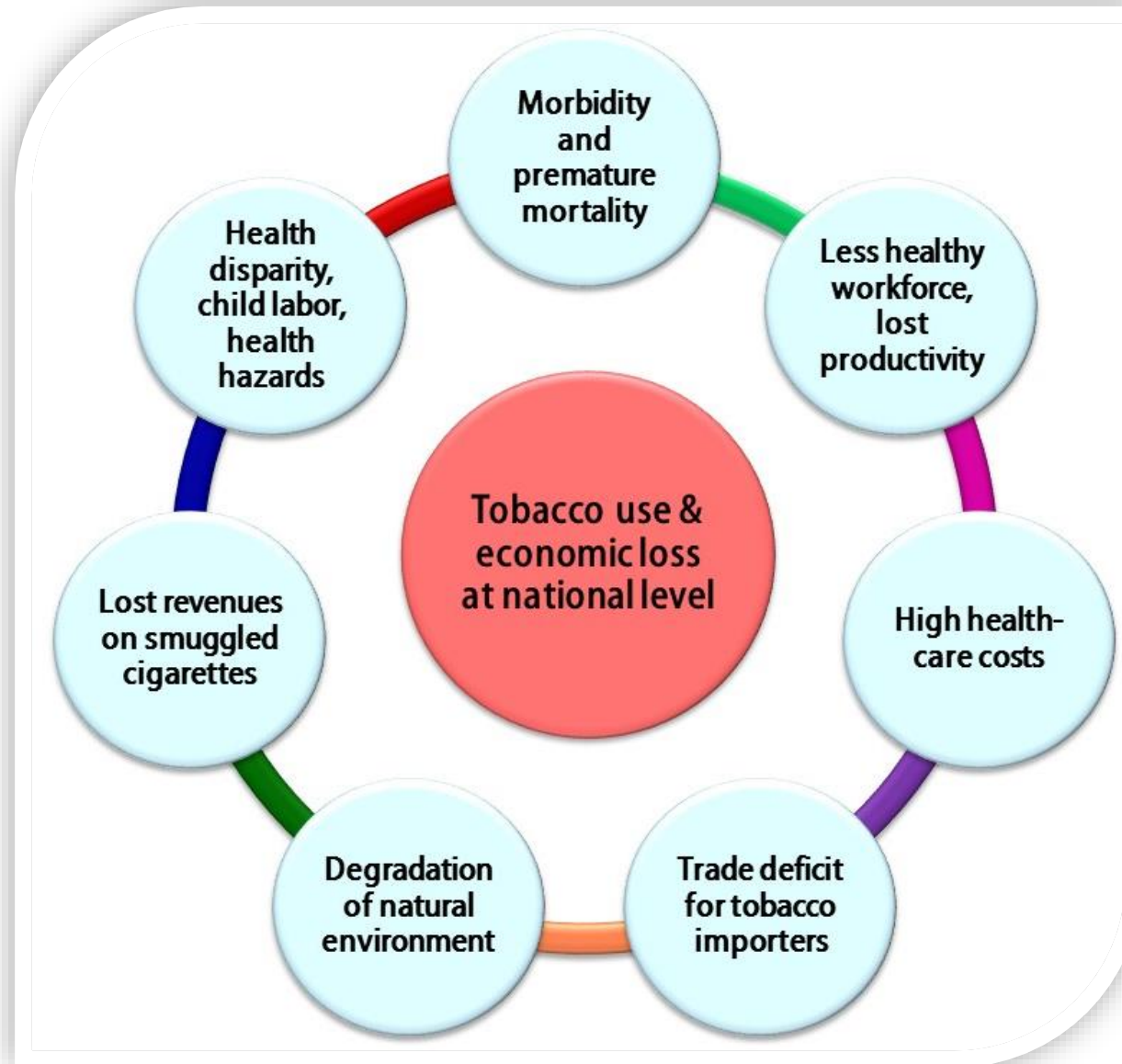
You can quit. CALL 1-800-QUIT-NOW  
CDC.gov/quit



# Tobacco Use and Poverty at the Household Level



# Tobacco Use and Poverty at the National Level





# Literature: Tobacco Use, Nutrition, and Poverty in Developing Countries

## ❑ Households divert a significant amount of scarce income to tobacco products

- Efroymson et al. 2001, John 2005, 2008; Wang et al. 2006; Jones and Efroymson 2011, Husain et al. 2016

## ❑ Crowding out effect of tobacco expenditure on basic needs expenditure

- Chelwa and Walbeck, 2014; John, Ross, and Blecher 2011; John 2008; Cheng-yun Pu 2008

## ❑ Reduction in the nutritional status of children as a consequence of the expenditure on smoking products, mediated via reduced food expenditure

- Block and Webb 2009, John 2008; Nonnemaker and Sur 2007; C M Best et al. 2007

## ❑ Tobacco using households have poorer dietary consumption than non-using households

- Subar and Harlan, 1993; Curtin et al. 1999; Padrao et al. 2007; de Castro and Taylor 2008; Palaniappan et al. 2001

## ❑ Tobacco expenditures exacerbate the effects of poverty and cause deterioration in living standards among the poor

- Bobak, Jha, and Jarvis, 2000; Peretti-Watel et al. 2009

### References (Journal/Source)

Efroymson et al. 2001 (Tobacco Control); John 2005 (Health Policy); John 2008 (Social Science and Medicine); Wang et al. 2006 (Social Science and Medicine); Jones and Efroymson 2011 (Report by HealthBridge Foundation of Canada); Block and Webb 2009 (Economic Development and Cultural Change); Nonnemaker and Sur 2007 (Social Science and Medicine); Best CM et al. 2007 (Nutrition), Chelwa and Walbeck, 2014 (ERSA working paper 453); John, Ross, and Blecher 2011 (Tobacco Control); John 2008 (Social Science and Medicine); Cheng-yun Pu 2008 (Social Science and Medicine); Bobak, Jha, and Jarvis 2000 (Tobacco Control in Developing Countries, [eds.] Jha and Chaloupka); Peretti-Watel et al. 2009 (International Journal of Drug Policy); Subar and Harlan, 1993 (Ann. N. Y. Acad. Sci. ); Curtin et al. 1999 (J Clin. Epidemiol); Padrao et al. 2007 (BMC. Public Health); de Castro and Taylor 2008 (Nutrition); Palaniappan et al. 2001 (J Nutr.)

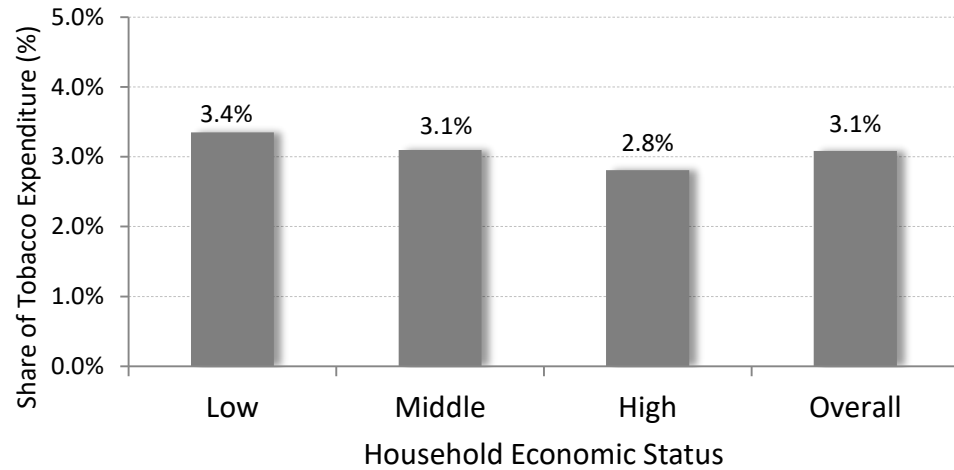
# Household Food and Tobacco Consumption Pattern in Bangladesh

**Table: Distribution of total food expenditure (including tobacco), Bangladesh 2010**

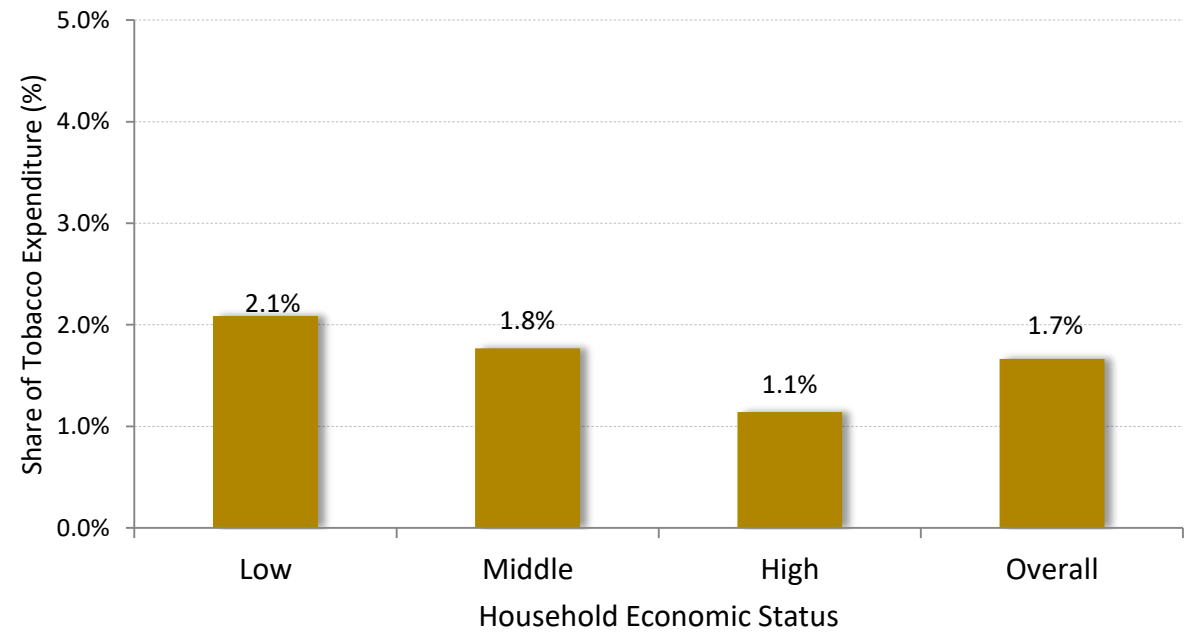
|                | Smoking Tobacco User only (n=2061) (%) | Smokeless Tobacco User only (n=3284) (%) | Dual Tobacco User only (n=3348) (%) |
|----------------|--|--|-------------------------------------|
| Cereals        | 42.7                                   | 43.4                                     | 43.7                                |
| Fish           | 12.7                                   | 13.6                                     | 12.8                                |
| Vegetables     | 10.5                                   | 10.6                                     | 9.8                                 |
| Meat           | 6.9                                    | 7.3                                      | 5.8                                 |
| <b>Tobacco</b> | <b>5.3</b>                             | <b>2.9</b>                               | <b>7.5</b>                          |
| Oil and Fat    | 4.9                                    | 4.9                                      | 4.2                                 |
| Fruits         | 3.5                                    | 3.5                                      | 3.1                                 |
| Pulses         | 2.7                                    | 2.6                                      | 2.3                                 |
| Miscellaneous  | 2.7                                    | 3.1                                      | 2.9                                 |
| beverage       | 2.5                                    | 2.1                                      | 2.7                                 |
| Milk           | 2.3                                    | 2.6                                      | 2.3                                 |
| Sugar          | 1.8                                    | 1.9                                      | 1.8                                 |
| Eggs           | 1.7                                    | 1.6                                      | 1.3                                 |
|                | 100%                                   | 100%                                     | 100%                                |

# Share of Tobacco in Total Expenditure

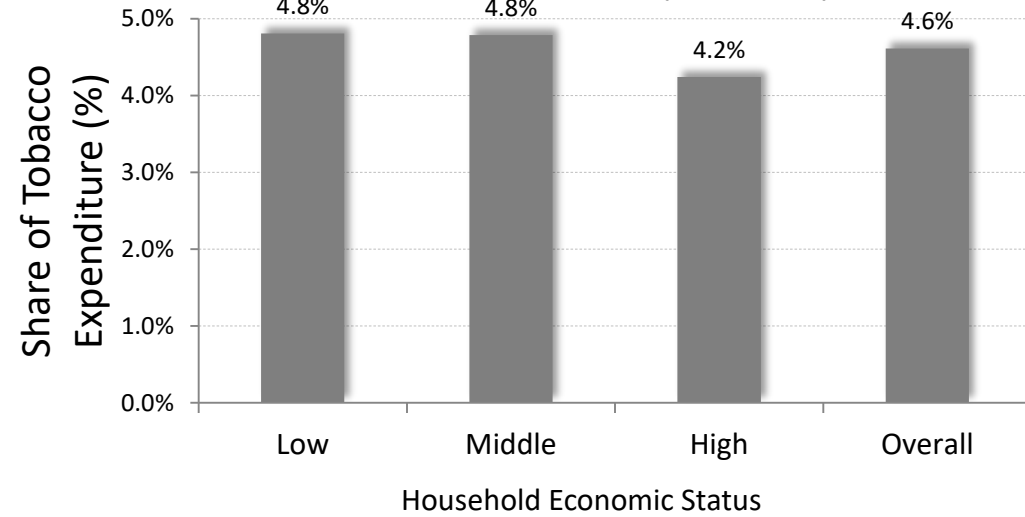
Smoking Tobacco User only (n = 2061)



Smokeless Tobacco User only (n = 3284)



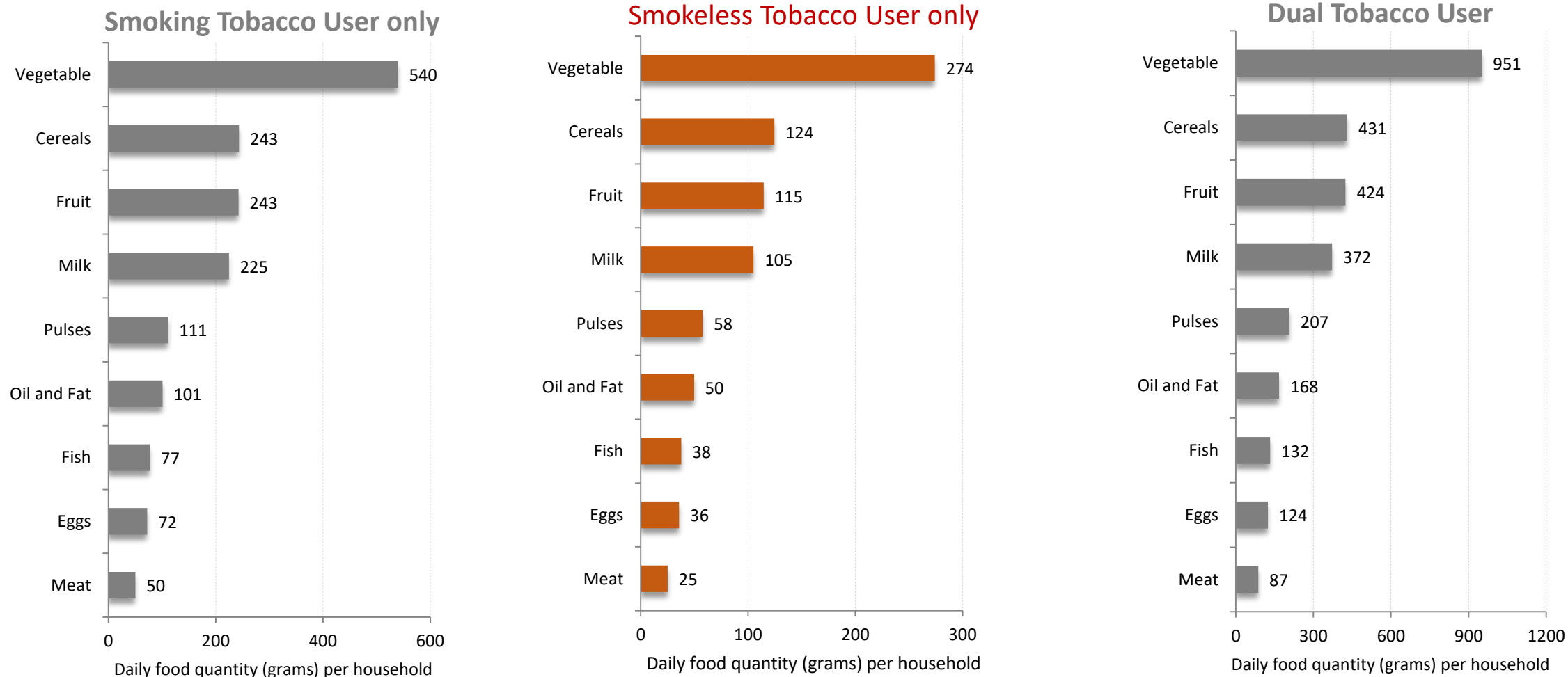
Dual Tobacco User (n = 3348)





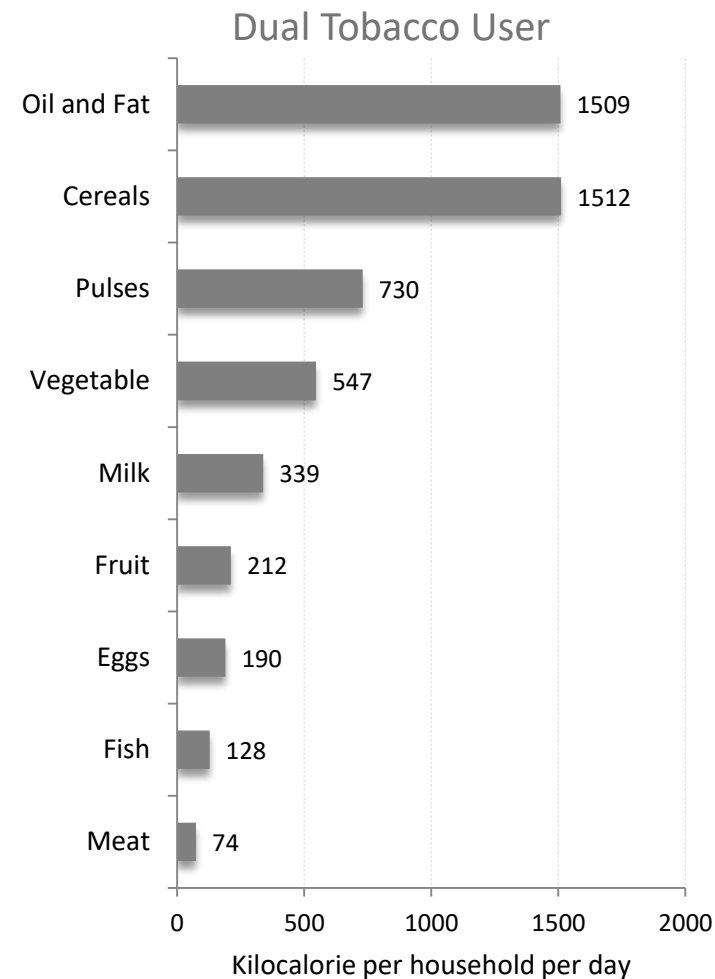
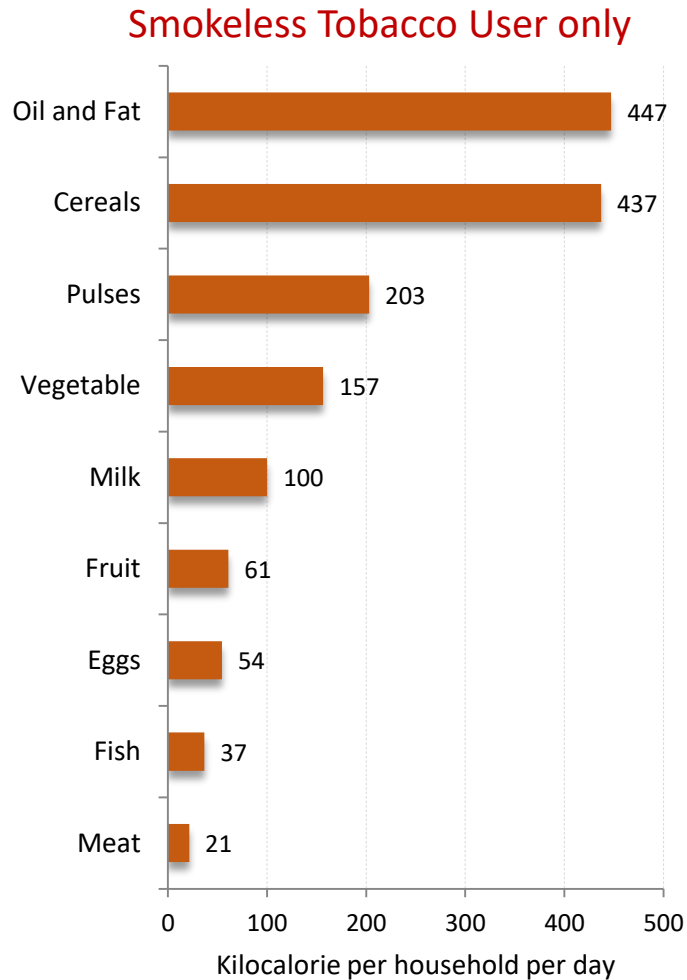
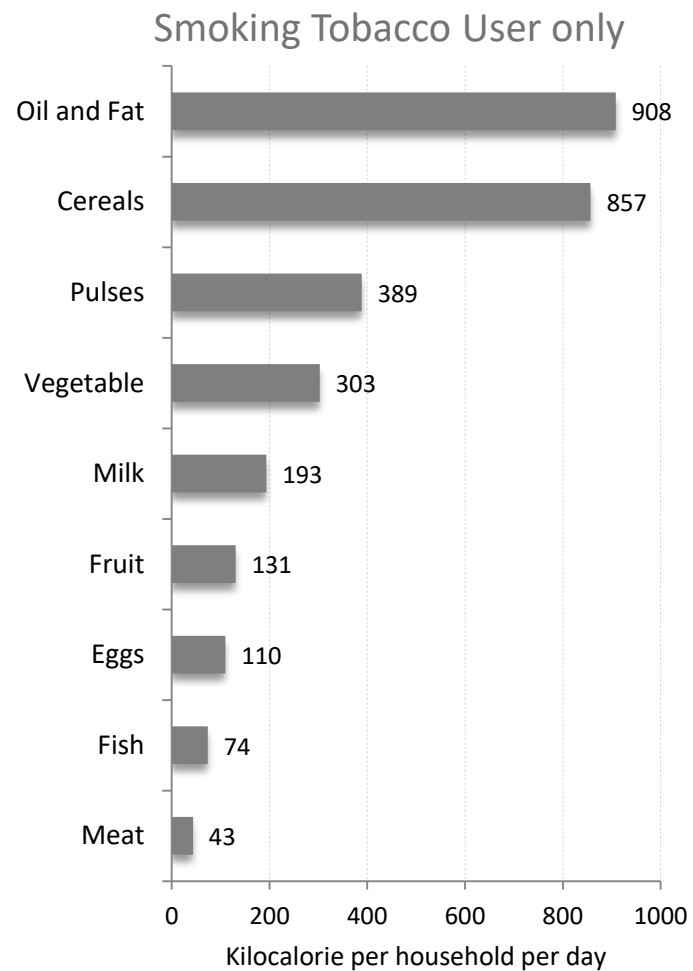
# Daily Quantity (grams) of Food Lost

## Opportunity cost of daily tobacco expenditure (grams of food per day per household)



# Daily Calorie (Kilocalories) from Food Lost

Opportunity cost of daily tobacco expenditure in terms of food-energy (kilocalories) forgone



# Tobacco Use and Malnutrition Nexus in Bangladesh: Summary of Gains

## Under the lower-bound and upper-bound scenarios

### Average gains in daily kilocalories/household

- Smoking-only household: 270 to 497 kilocalories (kcal) daily
- Smokeless-only household: 148 to 268 kilocalories (kcal) daily
- Dual-tobacco user household: 508 to 924 kilocalories (kcal) daily

### Decline in the percentage of households that are malnourished (from the baseline rate)

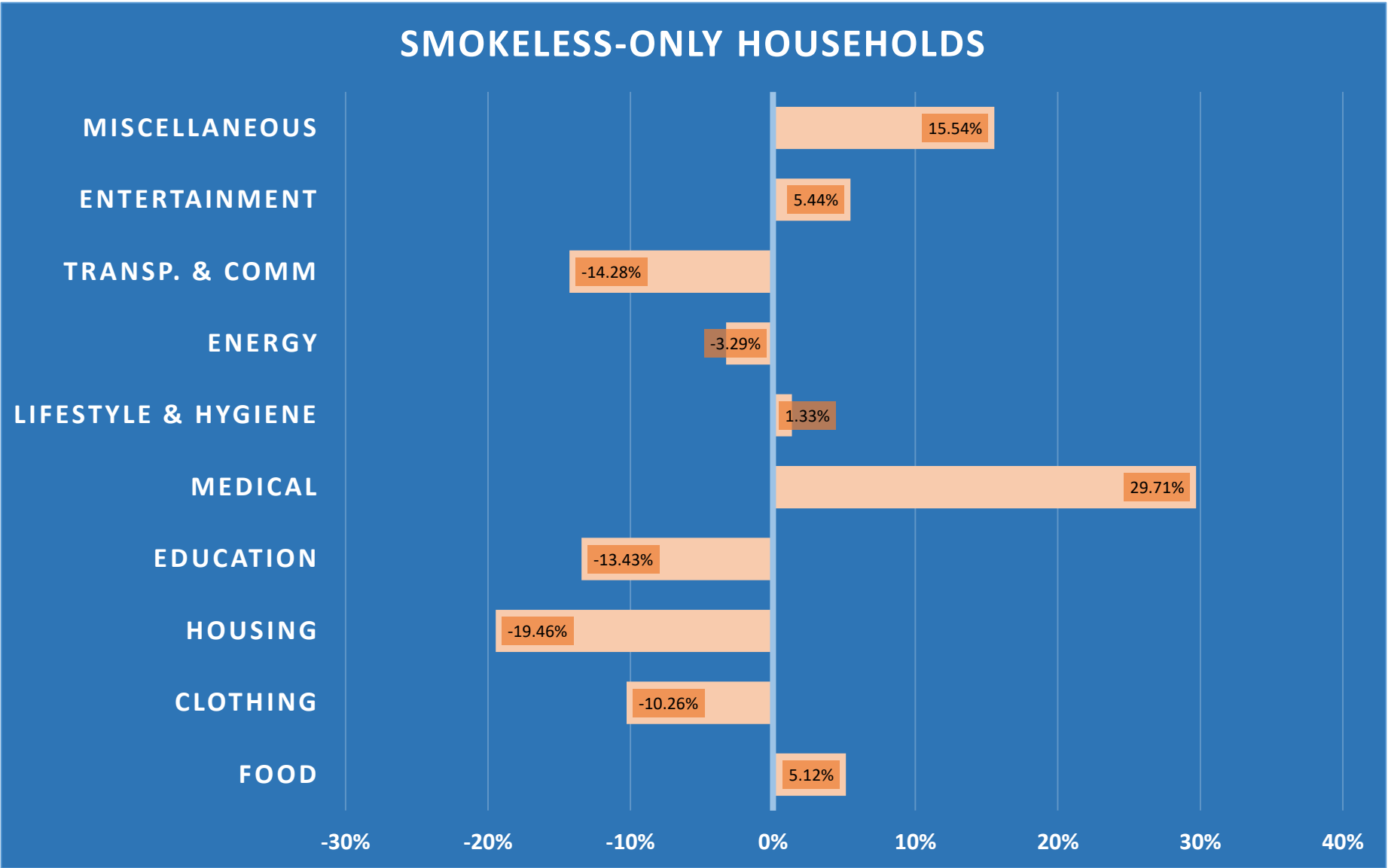
- Smoking-only household: 37.8% (baseline) to 32.9% or 28.8%
- Smokeless-only household: 33.8% (baseline) to 31.6% or 30.5%
- Dual-tobacco user household: 31.8% to 26.2% or 22.8%

### Additional number food-energy malnourished persons meeting their caloric requirements

- Total: 4.6 to 7.7 million additional households meeting their calorie requirements
- Smoking-only household: 1.24 million to 2.26 million
- Smokeless-only household: 0.84 million to 1.24 million
- Dual-tobacco user household: 2.5 million to 4.2 million

# Crowding-out effect of smokeless tobacco expenditure

Unadjusted differences in average expenditure share between tobacco user and non-user households



## Crowding-out effect of tobacco expenditure

$$w_{ij} = \beta_0 + \beta_1 T_i + \beta_2 \ln M_i + \beta_3 (\ln M_i)^2 + \mathbf{X}\boldsymbol{\beta}_4 + \sum_{d=1}^{63} \gamma_d \text{District}_{id} + \varepsilon_{ij}$$

Crowding-out is considered to have occurred if  $\widehat{\beta}_1$  is negative and statistically significant.

|                      | No Tobacco<br>(Expenditure<br>Share) | Any tobacco<br>$\widehat{\beta}_1$ | Smoking-only<br>$\widehat{\beta}_1$ | Smokeless-only<br>$\widehat{\beta}_1$ | Dual tobacco<br>$\widehat{\beta}_1$ |
|----------------------|--------------------------------------|------------------------------------|-------------------------------------|---------------------------------------|-------------------------------------|
| Food                 | 54.432                               | 2.383***                           | 2.118***                            | 1.993***                              | 3.264***                            |
| Clothing             | 6.44                                 | -0.410***                          | -0.332***                           | -0.404***                             | -0.510***                           |
| Housing              | 10.196                               | -0.788***                          | -0.420*                             | -0.779***                             | -1.230***                           |
| Education            | 4.941                                | -0.543***                          | -0.680***                           | -0.167                                | -0.934***                           |
| Medical              | 3.189                                | 0.187*                             | 0.168                               | 0.176                                 | 0.225                               |
| Hygiene              | 3.237                                | -0.0319                            | 0.024                               | -0.082**                              | -0.023                              |
| Energy               | 7.414                                | -0.170***                          | -0.139*                             | -0.212***                             | -0.143*                             |
| Transp. and<br>Comm. | 5.535                                | -0.402***                          | -0.330**                            | -0.470***                             | -0.385***                           |
| Entertainment        | 0.64                                 | 0.0223                             | 0.063                               | 0.01                                  | -0.007                              |

Adjusted differences in  
average expenditure  
share



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