



# 10<sup>th</sup> Better Air Quality Conference 2018, Kuching, Malaysia

## Health Effect of Indoor Air Pollution at Dakshinkhan Area of Dhaka City, Bangladesh

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# Introduction

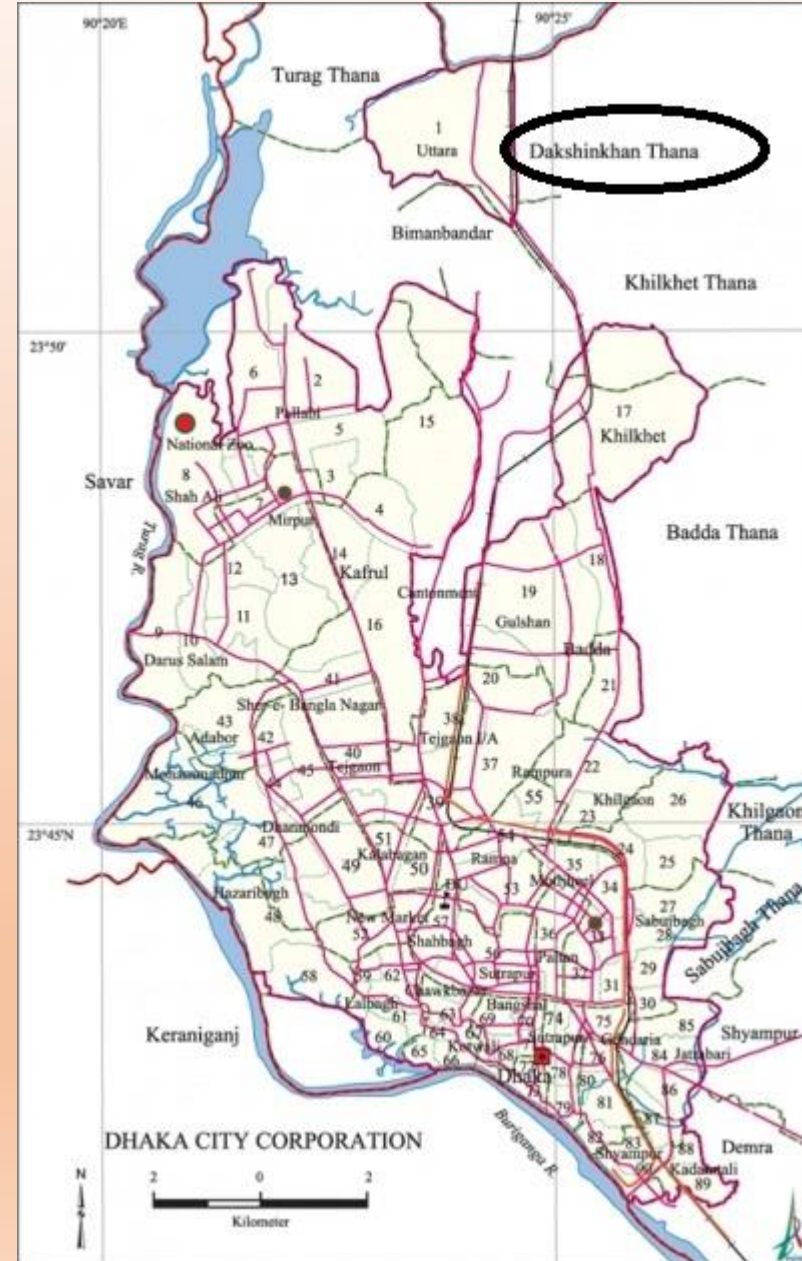
- Indoor air pollution is one of the main problem both in Urban and Rural area of Bangladesh.
- World Bank (CEA Report 2018) has given focus on the indoor air pollution.

TABLE - ES-1: ESTIMATED COST OF MORTALITY IN URBAN BANGLADESH AND GREATER DHAKA (US\$ BILLION) AND NATIONAL GDP (2015) EQUIVALENCES

	Urban Bangladesh				Greater Dhaka			
	Welfare Loss		Foregone Output		Welfare Loss		Foregone Output	
	Amount	GDP equiv.	Amount	GDP equiv.	Amount	GDP equiv.	Amount	GDP equiv.
<b>PM2.5 air pollution</b>								
ambient	2.42	1.24%	0.49	0.25%	0.53	0.27%	0.11	0.06%
household	1.27	0.65%	0.25	0.13%	0.28	0.14%	0.06	0.03%
<b>Inadequate water, sanitation and hygiene</b>								
direct impact	0.43	0.22%	0.14	0.07%	0.09	0.05%	0.03	0.02%
indirect impact	0.08	0.04%	0.04	0.02%	0.02	0.01%	0.01	0.00%
Arsenic in drinking water	0.80	0.41%	0.18	0.09%	0.18	0.09%	0.04	0.02%
Occupational pollutants	1.52	0.78%	0.29	0.15%	0.34	0.17%	0.06	0.03%
<b>TOTAL</b>	<b>6.52</b>	<b>3.35%</b>	<b>1.40</b>	<b>0.72%</b>	<b>1.44</b>	<b>0.74%</b>	<b>0.31</b>	<b>0.16%</b>

# Study Area

- **Dakshinkhan Thana** (Dhaka metropolitan) area 11.08 sq. km,
- located in between  $23^{\circ}50'$  and  $23^{\circ}53'$  north latitudes and in between  $90^{\circ}24'$  and  $90^{\circ}27'$  east longitudes.
- Population 1,77,760; Male 99743, Female 78017



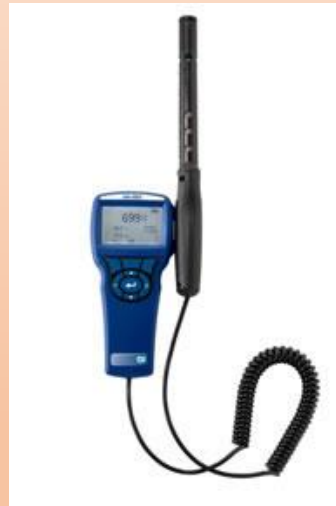
## Objective of the Study

- To assess the PM<sub>2.5</sub> and Carbon Monoxide in the household.
- To assess the Lung Function by using peak flow meter of female.
- To assess the health effects situation of the studied households from smoke exposure, particularly women

## Methodology



DustTrak Aerosol Monitor 8530



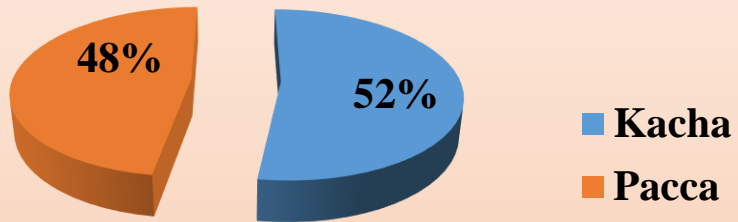
TSI IAQ-CALC Indoor Air Quality Meters 7545



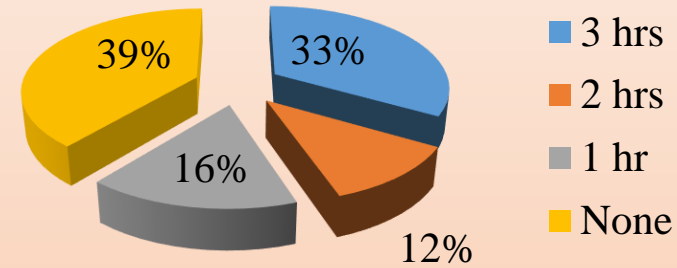
Model: 700034  
Range: (60-800) L/min

# Result

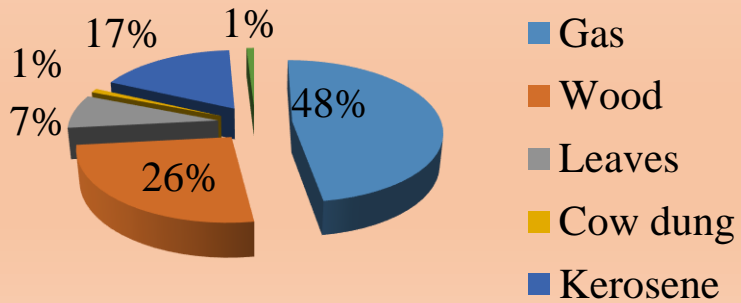
## Kitchen Types



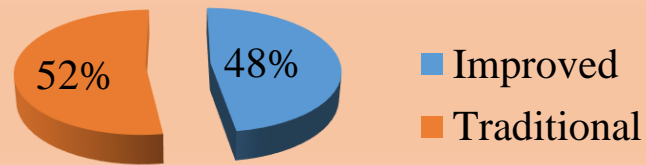
## Time Spend In Kitchen



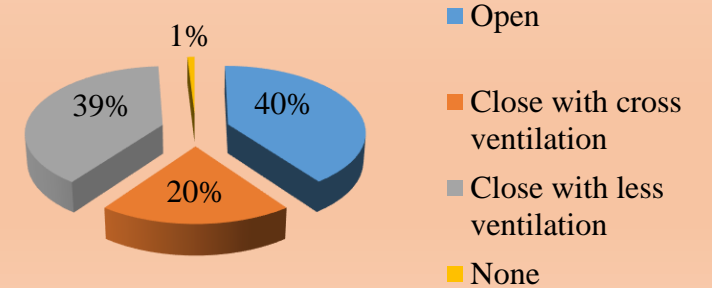
## Type of fuel



## Type of stove

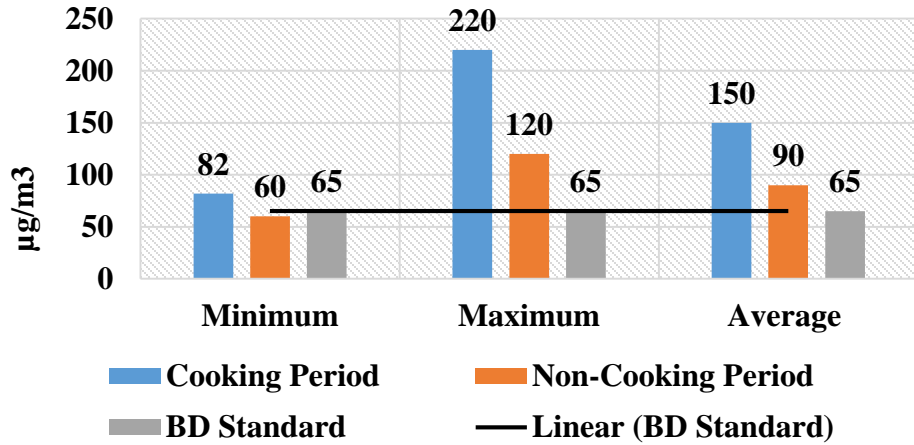


## Type of ventilation in kitchen

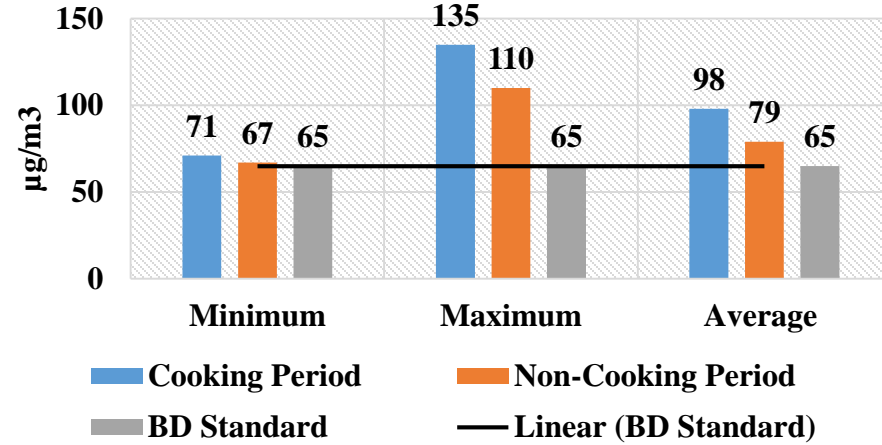


## PM<sub>2.5</sub> Concentration

### Traditional Kitchen



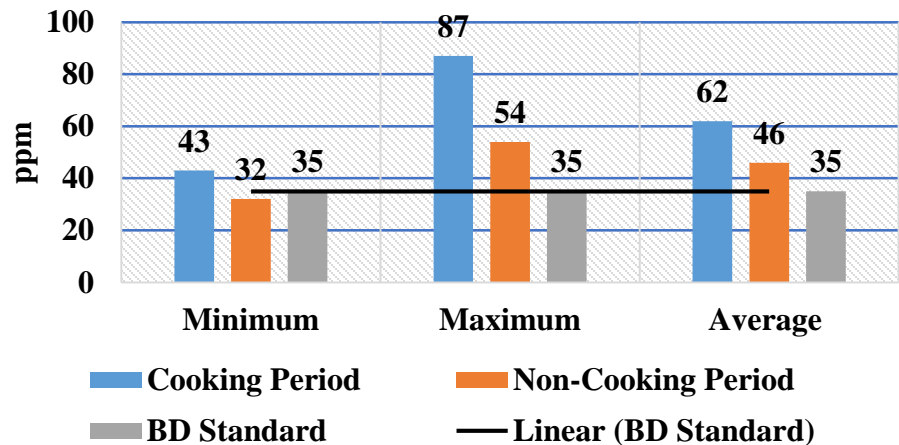
### Improved Kitchen



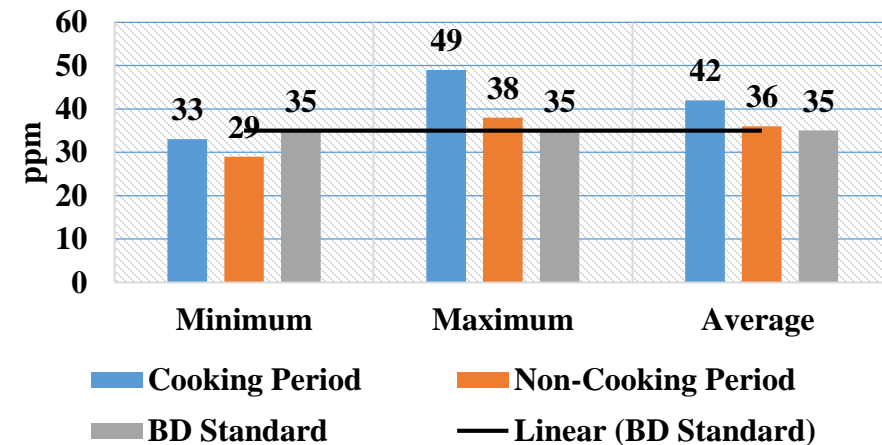
- Data Collected for 1 Hour (95 household)
- BD Standard is 65 µg/m<sup>3</sup> (24 Hours)
- WHO Standard is 25 µg/m<sup>3</sup> (24 Hours)

## CO Concentration

### Traditional Kitchen

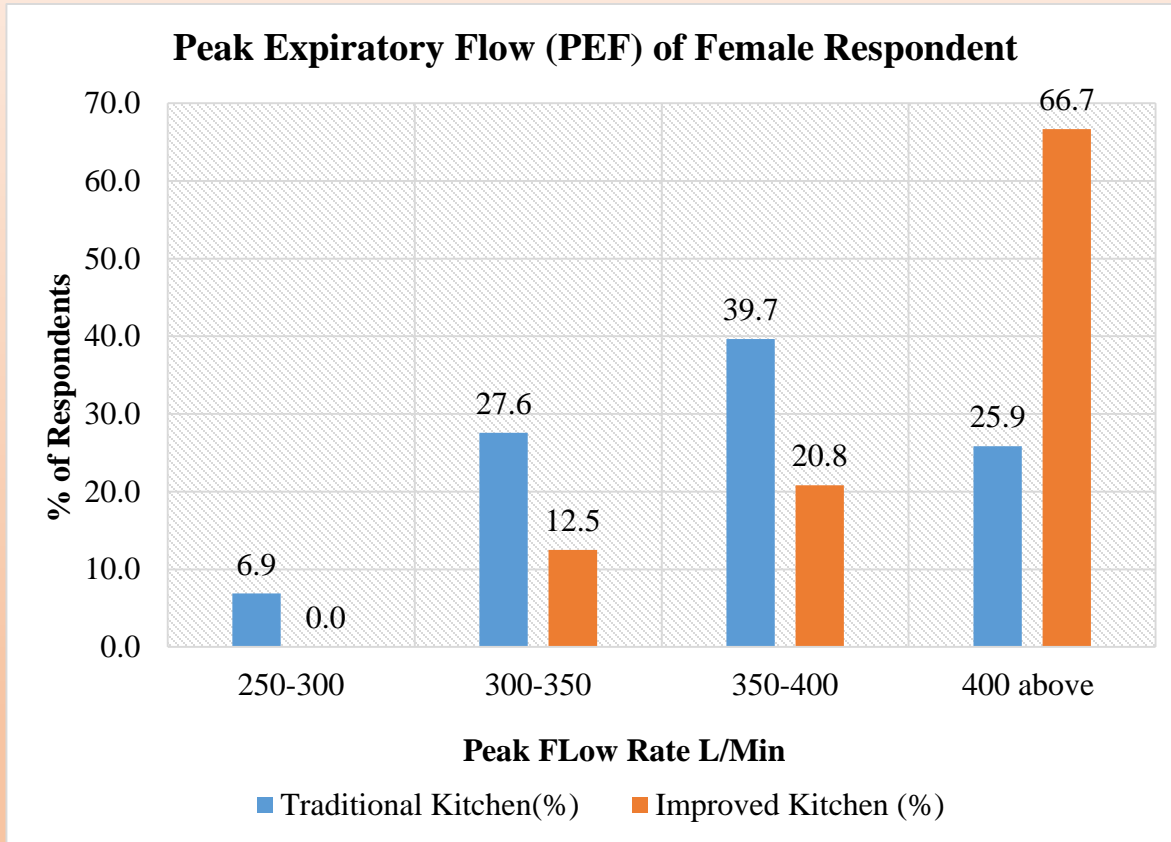


### Improved Kitchen



- Data Collected for 1 Hour ((95 household)
- BD Standard is 35 ppm (1 Hours)

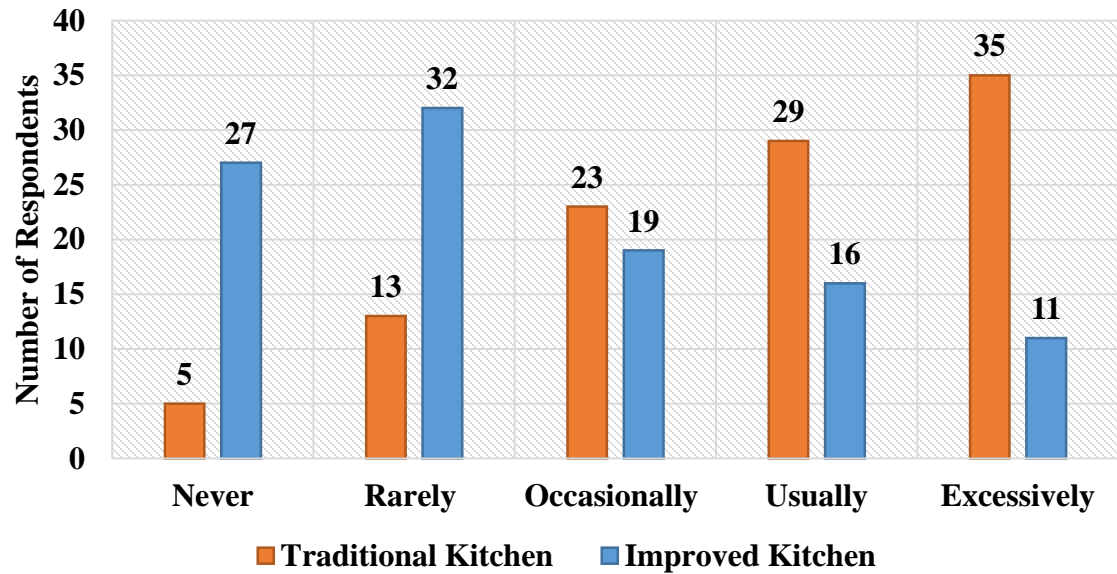
# Peak Flow Rate



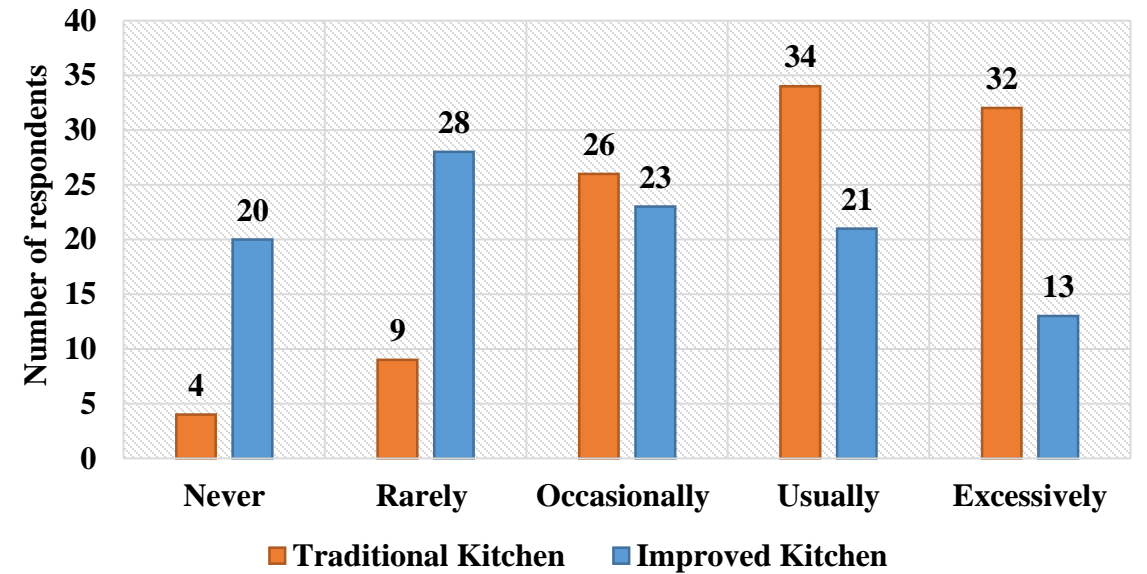
- According to EU normal range of PEF for women is 380-420 L/Min

# Health Impact

**Breathless frequency for Women**



**Eye-irritation Frequency for Women**



- **Total Number of respondent 105**



# Conclusion

**11** SUSTAINABLE CITIES  
AND COMMUNITIES



**13** CLIMATE  
ACTION



**Houses kitchen with proper and suitable ventilation**

**Motivated to use the natural ventilations in their houses**

**Extensive use of alternative energies should be promoted**

**Make sure exhaust fans are functioning in your bathrooms and kitchen**

*Thank you!*