*Iranian J Publ Health, Vol. 43, No.9, Sep 2014, pp.1305-1306*

**Letter to the Editor**

# The Relationship between Respiratory Symptoms and Lung Function with the Use of Gas Cooking in University Canteen Staff

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**(Received 11 Jun 2014; accepted 20 Jul 2014)**

## Dear Editor-in-Chief

Working in a canteen exposed to gas cooking daily could lead to respiratory or lung function problems. Gas cooking consists of propane, or butane, which is flammable. Burning gas cooking releases carbon dioxide, a greenhouse gas. The reaction also produces some carbon monoxide. The vapour could evaporate and might be harmful to health. There are many by- products that could be present when gas combustion occurs, e.g. nitrogen oxides, carbon monoxide. Therefore, the risk of respiratory symptoms or lung function problems could occur when those by-products are inhaled.

We conducted a cross-sectional study in 23 canteen staff, most were women aged between 17-64 years old and non-smokers, to evaluate the lung function and respiratory health. Exposure information was obtained from lung function by Spirometric test and self-administered questionnaire. In our study, staff working in a university canteen were exposed to cooking gas from the early morning (about 05.00 a.m.), for preparing materials and were continually exposed to cooking gas until 09.00 a.m. They were then exposed to gas cooking during lunch time to serve university staff and students. The hypothesis of the study was that daily expose to gas cooking was risk factor in respiratory systems and reduced lung functions.

We found that the most common symptoms occurring in canteen staff were breathlessness and eye symptoms. In respect of age, subjects at age 40-49 years old showed a high prevalence of respiratory symptoms (60.8%) (Table 1). In relation to respiratory symptoms and gas cooking, the subjects who were exposed to gas cooking showed a significant risk of phlegm, wheezing, eyes and nose symptoms compared to subjects who were not exposed to gas cooking (Table 2).

The use of gas cooking and respiratory symptoms had been studied; a previous study showed that gas cooking was related to FEV1 and FVC (1). Some reported that gas cooking enhances respiratory symptoms (2-4). Some said gas cooking is related neither to lung function nor to respiratory symptoms (5-6).

Although there was no association between lung function and exposure to gas cooking (data not shown) but some canteen staff reported they had breathlessness, nose symptoms and eyes symptoms while work in the university canteen. We have to bear in mind that frequent expose to indoor pollutants such as gas cooking could be harmful to the respiratory system (7).

So, staff working in a canteen exposed to gas cooking should be aware of its effect on respiratory system.

**Table 1:** The prevalence of respiratory symptoms in subjects

| Age range (yr) | Respiratory symptoms | | | | | | |
|---|---|---|---|---|---|---|---|
| | Cough n (%) | Phlegm n (%) | Wheeze n (%) | Breathlessness n (%) | Nose n (%) | Eyes n (%) | Total n (%) |
| Less than 20 | 0 | 1 (4.3) | 0 | 1 (4.3) | 1 (4.3) | 2 (8.7) | 5 (21.6) |
| 20 -29 | 1 (4.3) | 3 (13.0) | 2 (8.7) | 3 (13.0) | 1 (4.3) | 3 (13.0) | 13 (56.3) |
| 30-39 | 0 | 0 | 2 (8.7) | 2 (8.7) | 1 (4.3) | 1 (4.3) | 6 (26.0) |
| 40-49 | 2 (8.7) | 2 (8.7) | 1 (4.3) | 4 (17.4) | 2 (8.7) | 3 (13.0) | 14 (60.8) |
| 50 + | 0 | 2 (8.7) | 0 | 0 | 2 (8.7) | 1 (4.3) | 5 (21.7) |
| Total | 3 (13.0) | 8 (34.7) | 5 (21.0) | 10 (43.5) | 7 (30.4) | 10 (43.5) | |

**Table 2:** Association of respiratory symptoms with the use of gas cooking

| Symptoms | Gas cooking exposure | | p-value |
|---|---|---|---|
| | Exposed n % | Non-exposed n (%) | |
| Coughing | 2 (8.7) | 1 (4.3) | ۰.٦٤ |
| Phlegm | 6 (26.1) | 2 (8.7) | 0.00۳ |
| Wheeze | 3 (13.0) | 2 (8.7) | <0.001 |
| Breathlessness | 8 (34.8) | 2 (8.7) | 0.009 |
| Nose e.g. itchy | 5 (21.7) | 2 (8.7) | 0.001 |
| Eye e.g. watery, itchy | 7 (30.4) | 3 (13.0) | 0.0۲ |

The ventilation system in canteens should be well managed to keep staff working in a healthy environment. However, we need to study this further in respect of the actual concentration of gas cooking in the kitchen and its by-products to ensure that people who work in the kitchen are exposed to the acceptable levels of gas cooking combustion.

## Acknowledgements

The authors declare that there is no conflict of interests.

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