THE EFFECTS OF OCCUPATIONAL POLLUTANTS ON THE RESPIRATORY HEALTH OF FEMALE INFORMAL STREET TRADERS IN WARWICK JUNCTION (WWJ)

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Introduction

The term “informal sector” was first coined in the 70’s by the epidemiologist Keith Hart who conducted extensive research of street traders in Ghana.

In Kwazulu-Natal, Warwick Junction trading hub is the only informally structured market place in a public space in South Africa. The market houses at least 800 traders and on average 460 000 commuters per day. 98% of these traders are women and almost 70% of the traders are involved in cooking or handling food.

The use of biomass fuels and other substances as sources of fuel during the cooking processes have been shown to have adverse respiratory health outcomes.

IAARC has classified emissions from the burning of biomass fuels as a Class 2A carcinogen. Globally at least 50% of the world’s population use biomass fuels as a primary source of fuel.

Informal street traders are on a daily basis exposed to the noxious emissions and dust as a result of occupational pollutants used in their trading processes.

Aims and Objectives

To compare the respiratory health outcomes among ambient pollutant exposed and non-exposed female informal street traders in Warwick Junction trading hub.

Objectives:

• To describe the respiratory health outcomes in exposed and non-exposed female informal street traders
• To determine the association between pollutant exposed female informal street traders and adverse respiratory health outcomes

Results

The exposed participants showed statistically significant reporting of respiratory symptoms. Table 2 summarises the reporting of respiratory symptoms. Most significant findings were in exposed participants who reported chronic cough and a tight or wheezy chest with of 0.009 and 0.019 . Although not statistically significant, 16% of the women reported having Grade 4 dyspnea.

Methods

Random sample of 305 female street traders, from the various markets within the trading hub including: mielie cookers, bovine head market, herb market (exposed to respiratory irritants) and clothing market (non-exposed comparison group)

Data Collection Tools:

Validated questionnaires, with detailed respiratory health questions, administered by trained interviewers.

Participants were asked about respiratory symptoms that would broadly suggest common respiratory diseases such as chronic bronchitis, asthma, COPD.

The respiratory symptoms that we focused on for this poster were; chronic cough for > 3 weeks, grade 4 dyspnea, productive cough and light or wheezy chest. Lung Function Tests performed by spirometric technician. ATS/ERS guidelines were followed.

Clinical assessments (BP, random GM, BMI, Hb)

Demographics and Risk Factors (Table 1)

The participants (n= 305) were middle aged (mean=43.6 years). A substantial number were single (62%). The education level completed indicated that on average the women attended Grade 7 schooling level and resided predominantly in Durban and surrounding areas. The participants on average were working as traders in Warwick Junction (WWJ) for 14 years with a small percentage (5%) working for >30 years. 43% of the women reported having a doctor diagnosed chronic condition.

The exposed sample constituted 167 (55%) of the participants. Demographics showed no statistically significant variation between the exposed and non-exposed groups.

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>EXPOSED n(%)</th>
<th>NON-EXPOSED n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic Cough*</td>
<td>52 (31)</td>
<td>25 (18)</td>
</tr>
<tr>
<td>Wheezy Chest*</td>
<td>114 (68)</td>
<td>75 (54)</td>
</tr>
<tr>
<td>Productive Cough*</td>
<td>28 (17)</td>
<td>5 (4)</td>
</tr>
<tr>
<td>Grade 4 Dyspnea</td>
<td>27 (16)</td>
<td>11 (8)</td>
</tr>
</tbody>
</table>

* p < 0.05

Regression Models:

Linear regression models were designed to compare lung function tests between the comparison groups. These models were adjusted for age, height, doctor diagnosed respiratory diseases and the area of working.

The adjusted models predicted lung function parameters (FEV1, FVC) were significantly reduced in traders in the exposed group. (Table 3)

Logistic regression was performed describing the respiratory symptoms between the groups. These models were adjusted for age, height, doctor diagnosed respiratory diseases and the area of working.

The logistic regression odds ratios (OR) were statistically significant for chronic cough, tight wheezy chest and grade 4 dyspnea within the exposed group. (Table 4)

Discussion

The informal sector by its unstable nature is a largely marginalised and vulnerable group of workers.

These workers are faced with a multitude of challenges on various spheres of their lifestyle. From their socio-economic status to their struggle to earn a basic income to support their families.

Scientific literature has supported the theory that the exposure to noxious emissions from burning of “un-clean fuels” have shown a causal relationship with adverse respiratory outcomes.

This study in Warwick Junction amongst female traders has shown statistically significant results in exposed group. Self-reporting of respiratory symptoms and objective lung function tests in the exposed group indicate significant OR and $\beta$ coefficients.

The use of occupational pollutants by these traders indicate the probable cause of adverse respiratory outcomes.

It is therefore crucial that more research is required to further elucidate and describe effects of occupational pollutants in this sector.

Although implementing of interventions to reduce exposure seems like the most likely solution; the challenge exists in changing the mind-set of these traders regarding their exposure and their health.

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References