

10037 - Screening for Mental Disorders in Saudi Arabia: A validation study of the PHQ in Primary Care

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Objectives:

Somatization, the tendency to seek treatment for medically unexplained physical symptoms is an important issue in primary care practice. This study validates the somatoform module of the Patient Health Questionnaire (PHQ), a screening instrument for the identification of somatoform and other mental disorders. The PHQ is utilized to measure the prevalence of somatization and comorbid depression in Saudi Arabian primary care patients.

Methods:

This is a cross sectional study of 431 male and female Saudi Arabian primary care patients with a two stage design for purposes of validation of the somatoform, depression and anxiety modules of the PHQ. The first consecutive 173 patients (40%) completed the self administered Patient Health Questionnaire and were interviewed by mental health professionals using the Structured Clinical Interview (SCID-R). The PHQ was then used to measure the prevalence of somatization, depression and anxiety in 431 primary care patients.

Results

This study validates the somatoform and depression modules of the PHQ with the criterion standard of psychiatric interviews in a Saudi population. The anxiety module was weak in terms of sensitivity and agreement with the criterion standard in this population. Clinically significant rates of somatoform, depression were identified in primary care patients.

Conclusions

The prevalence of somatization and comorbid depression in a primary care population in Saudi Arabia are similar to published rates in the U.S. and worldwide. It is possible to screen primary care patients in international settings for mental disorders and the PHQ is a valid instrument for that purpose. There may be applications of the PHQ to patients from minority groups with low educational levels and poor English fluency.

Key Words: somatization, somatoform, mental disorders, primary care,
Patient Health Questionnaire

“ISEA 2002 ABSTRACT”

10126 - Indoors, Outdoors and In Transit Exposure to Carbon Monoxide in 3 Cities in Peru

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Introduction:

Estimation of personal exposure to air pollutants is necessary for the evaluation of high-risk populations and determining productive control strategies. However, it is difficult and costly to measure personal exposure. Hence, data of air pollution patterns in microenvironments linked to personal activity data are used as surrogates.

Carbon monoxide (CO) is a ubiquitous gas that is produced by natural and anthropogenic activities. Review of the literature on CO toxicity reveals a complex physiological scenario that can not be solely explained by Carboxyhemoglobin (COHb).

In developed countries there is evidence of a positive association between daily fluctuations in nonaccidental mortality and ambient CO at concentrations that meet guidelines or standards for Air Quality.

In developing countries the health effects from CO exposure may be a more serious problem. This problem is enhanced by: higher CO concentrations; lack of or failure to enforce environmental regulations; undernourishment of the population; limited know-how and lack of financial resources for environmental research; rapid urban growth and land-use changes.

This study reports measured continuous personal exposure to CO in representatives indoors, outdoors and in transit microenvironments in 3 cities in Peru: Lima and Trujillo at sea level and Arequipa at 2,500 meters above sea level. These cities account for about 35% of Peru's population and more than 75% of the vehicle fleet.

Method:

In 2001, CO exposure was measured in urban, suburban and rural areas. Care was taken to identify direct CO sources. In mass-transit measurements were taken at 3 different locations. Indoor measurements were taken at curbside, just before entering and inside the premise. Outdoor measurements were taken every 100 feet and on both side of the sidewalks.

In Lima, CO measurements included in-situ readings of temperature, wind velocity and direction.

The Langan T15d high-resolution, data logger, personal exposure monitor measured CO every minute. The Bacharach Monoxor II High Range CO gas analyzer was used to measure CO vehicle emissions at idle. These monitors were calibrated and operated according to manufacturer's recommendations.

Results:

The main CO sources were vehicle emissions, biomass burning and cigarette smoke.

10300 - CO concentrations (in PPM) were higher (1.2 - 36.0) than those recently reported from developed countries (0 - 3.50). CO readings were higher in impoverished neighborhoods (4.56 vs. 2.99). At sea level, maximum CO reading was 48.0 and at 2,500 meters above sea level it was 31.0.

Average CO vehicle emissions (23,000 – 26,000 PPM) is similar to vehicle emissions of the most CO polluted cities that have been studied in the World.

Conclusions:

Urban layout, traffic road designs and meteorological factors enhance CO concentrations.

CO readings, especially at high altitude and, for pregnant women and tourists, could constitute a risk to their health.

Indoor CO concentration is enhanced by the lack of ventilation.

Motor vehicles do not have emission control systems and, vehicle ownership and driving habits are conducive to high CO emissions.

These cities need to have an environment friendly development program and must initiate an education campaign to teach people how to minimized pollution and how to protect themselves from pollution.

Important Information for Abstract Process:

Preferred presentation method: Oral

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10310 - Indoor-outdoor relationships of Respirable Suspended Particulate Matter in two poor urban communities of Delhi

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It is now well known that the traditional domestic practice of cooking in primitive stoves with low grade fuels and in badly ventilated kitchens can have serious implications for the health of women and children . In rural areas, women and children are exposed only to pollutants from such combustion. But their counterparts in urban slums are additionally exposed to pollution from industrial and vehicular sources because slums are commonly located near factories and highways. The dense clustering of houses, poor ventilation, and fugitive emissions compound the problem manifold. Thus it would appear that the urban slum community bears the largest air pollution exposure burden in developing countries. However, the information related to the urban situation is meagre. We conducted a study in two slums of Delhi – one in a highly polluted area and another in a comparatively less polluted area. In each slum 20 houses each were chosen in two fuel groups – wood and kerosene. This paper is part of a larger study that aimed to measure daily integrated exposure levels of infants and their mothers to Respirable Suspended Particulate Matter (RSP) using a micro-environmental approach. The concentration levels were measured using portable samplers that were either kept stationary at certain locations within each micro-environment or attached to the waist of the cook. In addition, in a sub-set of 16 houses continuous monitoring for 24 hours was done in the stationary mode. In this case samplers were placed in the room in which the infant spends the maximum amount of time, at a height corresponding to an average infant's height of the nose from the ground. Near ambient levels were measured in the alley just outside the house. It was observed that indoor background levels during the day and at night time could be exceedingly high. This is very surprising because, at night very few houses could afford space heating. We speculate that it may be due to re-suspension of dust, infiltration, unknown sources, or a combination of these factors. The indoor-outdoor correlations were found to be very weak. The outdoor RSP levels measured just outside the houses (near ambient) were higher than those reported by the ambient air quality monitoring network at the corresponding stations. More importantly, the outdoor levels measured in this study not only underestimated the daily integrated exposure, but were also poorly correlated with it. This study has yielded many insights that were not anticipated prior to the study, specially in the context of indoor-outdoor relationships of RSP. Since this study focused mainly on particulate matter (one of the most important pollutant), it is not known whether similar patterns and relationships will be obtained for other pollutants. While the fraction of daily RSP exposure attributable to cooking in urban slum areas is not as high as in rural areas, this again may or may not be the case for other pollutants. The patterns and relationships that we have encountered in this study can perhaps be generalized for all urban poor areas, but not necessarily for the more developed urban areas.

10852 - Urine mutagenicity in charcoal workers: a cross-sectional study in Northeastern Brazil
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Charcoal production by wood carbonization is an ancient process that has changed little since the Bronze Age. Its production in large scale is necessary to sustain some steel and pig-iron industries. Brazil has the largest production of wood charcoal in the world, and 3.6 million tons of wood are burned yearly to supply local pig-iron industries.

Approximately 110,000 workers are linked directly to the production and transportation of charcoal. The charcoal-producing kilns are not designed to recover by-product gases or condensable products, and the finished charcoal is removed manually, exposing the workers to wood smoke as well as to charcoal dust. Among other agents, the workers are exposed to aldehydes, phenols, methoxyphenols, and polycyclic aromatic hydrocarbons. Although the use of charcoal in steel industries, as well as the resulting devastation of native vegetation have been debated in economic and ecologic fora, the health effects of the workers in charcoal production have rarely been discussed or investigated. No single study that correlates this activity to genetic damage using molecular biology techniques is available in the literature. Thus, we designed a cross-sectional molecular epidemiology study to investigate the health of workers in this industry in northeastern Brazil. We used the *Salmonella* (Ames) mutagenicity assay to evaluate the urinary mutagenicity of 74 male workers involved in wood-cutting and transport (non-exposed) and charcoal production (exposed). Urine (~50 ml) per subject was enzymatically hydrolyzed overnight, the organics were extracted by C18/methanol, and the organics were solvent-exchanged into dimethyl sulfoxide for bioassay. Frameshift strain YG1041 (*hisD3052*, *rfa*, *uvrB*, pKM101) of *Salmonella* that also contains acetyltransferase and nitroreductase activities was used in the standard plate-incorporation assay. Mutagenic potencies were calculated from the linear portion of the dose-response curves and normalized for creatinine levels. The average (SD) revertants/ml-equivalent in the exposed group (n = 38) was 5.43 (5.98) and in the non-exposed group (n = 36) was 2.44 (2.71). Using the Wilcoxon-Mann-Whitney test, these results were significantly

different ($p = 0.006$); the distribution of smokers was similar in both groups ($p = 0.380$). These results indicate that exposure to mutagenic organics from charcoal production, mostly likely PAHs, are absorbed systemically by workers in this industry. Additional biomarkers that will be examined among this population include levels of DNA adducts in peripheral leucocytes using ^{32}P - postlabeling and levels of hydroxylated PAHs in the urine. [Abstract does not necessarily represent the policy of the US EPA.]

Abstract for ISEA/ISEE 2002

10892 - Particulate Exposure and Size Distribution in Wood Burning Houses in Costa Rica

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Topic

Developing countries

The most common energy sources for cooking and heating in developing countries are biomass fuels. Such biomass combustion is causing a high level of indoor air pollution. It is likely that the rural population in developing countries is exposed to a high level of air pollutants from biomass combustion. These air pollutants include particulates and other combustion by-products. Although there have been few previous studies, measurements in houses with biomass fuels indicated very high levels of $PM_{2.5}$ and PM_{10} . These may be a significant risk factor of respiratory illness. We conducted a study to observe the effect of biomass combustion on the indoor air quality of residential areas in Costa Rica. The residential air quality was measured in 23 houses with wood burning stoves in Costa Rican rural areas. $PM_{2.5}$ and PM_{10} concentrations were measured by single stage impactors and particle size distribution was continuously measured by an aerodynamic particle sizer. CO and CO₂ concentrations were also measured using a continuous monitor with datalogger. The samplers were placed in the kitchen area for approximately 24 hours. Housing and cooking conditions were also recorded. When wood burning was occurred, $PM_{2.5}$ measurements had an average of $43.9 \pm 30.9 \mu\text{g}/\text{m}^3$ and PM_{10} had an average of $131.7 \pm 107.5 \mu\text{g}/\text{m}^3$. Average CO concentrations were between 0.5 and 3.3 ppm. When monitoring data were combined to determine a size distribution per house, most houses had a particle size distribution of either one or two peaks at around 0.7 μm and 2.5 μm aerodynamic diameters. The particulate levels increased rapidly during cooking and decreased quickly after cooking. This study observed slightly lower particulate levels than other studies in the highland rural areas of other Central American countries. Since the houses in this study were located in a warmer region, residential ventilation rates might be significantly higher. The use of vents in the cooking facility may be another factor. However, it is important to note that people, especially women and children, are exposed to significantly high levels of particulates during cooking.

Environmental Epidemiology at the Latin America and the Caribbean Health Sciences Database (LILACS): What is Being Published?

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The publication of study results on peer-reviewed scientific journals is one method used by scientist to communicate their work to others. The Latin America and the Caribbean Health Sciences Database (LILACS) compiles information from nearly 600 scientific journals from the Region. The indexed journals are selected on the basis of their scientific merit and timeliness of publication, thus, this database constitute an important source of information on the health sciences literature from the Region. The purpose of our analyses was to assess what was published throughout the Region on the health effects of environmental chemical or physical agents. Our assessment was limited to observational studies published between 1999-2000. Literature reviews or medical reports were excluded from the analyses. Also, excluded were studies on environmental tobacco smoke or mercury exposures from dental occupations or work. After exclusions, we found that there were 42 studies related to the health effects of environmental chemical or physical agents. The types of exposures more studied were pesticides (29.0%) and lead (26.2%), followed by air pollution (16.7%) and mercury (14.3%). Seventy-six percent of the studies were conducted in Brazil, Chile, and Mexico. The other 22 % of the studies were conducted in 6 countries: Argentina, Colombia, Ecuador, Perú, Uruguay, and Venezuela. The studies were published in 23 scientific journals of which 70% originates in Brazil, Chile, and Mexico. Through this assessment we have been able to identify what are the environmental health problem/research topics receiving more attention in the Region. We also identified where was the information located, which may actually be extremely helpful to peers from countries were such research is not conducted. Not all the studies conducted in Latin American and the Caribbean may actually get published, thus, one limitation of this assessment is that we do not know whether it is representative of the research actually being conducted in the Region.