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OBJECTIVES: Non-adherence to a prescribed therapeutic program is an issue in the treatment of chronic diseases more so for asthma, in which the lack of symptoms may be interpreted as remission and beliefs about inhaled corticosteroid (ICS) could also result in non-adherence. The objective of the study was to analyse the self-reported adherence to ICS therapy and beliefs about medicine. **METHODS:** Adult patients previously diagnosed with asthma and who were prescribed ICS, visiting emergency room of a tertiary care public chest hospital for asthma exacerbation were recruited (March 2008-December 2009). Patients completed self-reported questionnaire containing 49 questions on six domains: socio-demographic, clinical profile, causal belief, self-report on adherence, beliefs about medicines and medication adherence report scale (MARS) after stabilization. **RESULTS:** Of the 200 patients, 51.5% were between 30-40 years, 64% were female, mean duration of asthma was 10.5±8.1 years and 51.5% were having severe asthma. Salient findings on self-report adherence were, 49% reported that they took ICS even if asymptomatic; 91% reported that they forgot to take their ICS some or most of the times; 84% reported that they avoided ICS some of the times. In response to individual item for MARS, 15.5% claimed that they took ICS as prescribed. Significant positive correlation was observed between treatment necessity and reported adherence ($r=0.445$, $p < 0.001$). Patients who were concerned for the potential effects and risk of dependence had low adherence with significantly negative correlation. Younger age group had a significant correlation with social inhibition and female gender correlated significantly with fear of adverse effects and social inhibition as the cause for avoiding ICS. **CONCLUSIONS:** The findings support the model of treatment adherence, which incorporated beliefs about treatment as well as illness perceptions. The necessary-concerns offer a potentially useful framework to help clinicians elicit key treatment beliefs influencing adherence to ICS.

PRS7

THE EFFECT OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) ON HEALTH STATUS IN URBAN CHINA

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OBJECTIVES: The prevalence of COPD in China has been estimated at approximately 8%, with only a third of patients receiving a diagnosis. The overall prevalence it is expected to rise considerably. The aim of this study was to quantify the burden associated with this condition in urban China. **METHODS:** Data from the 2010 China National Health and Wellness Survey (NHWS) were used (N=19,954). The NHWS is a self-reported survey administered to the adult population of urban China using a mixed methodology. Respondents with varying levels of self-reported COPD severity (mild or moderate/severe) were compared with those who did not report a COPD diagnosis on health status (using the SF-12v2 instrument). Regression modeling controlled for demographics (age, gender, education), health behaviors (smoking status, exercise behavior, alcohol use), and comorbidities (BMI level and Charlson comorbidity index). **RESULTS:** A total of 890 patients reported a diagnosis of COPD (4.46%). Most patients reported their condition as mild (n=697; 78.31%) with the remaining patients reporting their condition as either moderate or severe (n=193; 21.69%). Even after adjusting for covariates, patients with moderate/severe COPD reported significantly worse mean mental (44.90 vs. 46.26) and physical (47.26 vs. 49.59) component summary scores compared with those without COPD ($p < .05$). Similarly, patients with moderate/severe COPD reported significantly worse health state utilities compared with those without COPD (0.68 vs. 0.71). No health status differences were observed between those with mild COPD and those without COPD. **CONCLUSIONS:** The results suggest a significant burden among those who reported a diagnosis of COPD in urban China. As the prevalence of COPD continues to rise, a greater emphasis on disease management could result in an improvement in health status.

PRS8

THE EFFECT OF ASTHMA ON HEALTH STATUS, WORK PRODUCTIVITY, AND HEALTH CARE RESOURCE USE IN URBAN CHINA

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OBJECTIVES: Although the prevalence of asthma in China has been estimated between 1-2%, it is expected to rise considerably. The aim of this study was to quantify the burden associated with the condition in urban China. **METHODS:** Data from the 2010 China National Health and Wellness Survey (NHWS) was used (N=19,954). The NHWS is a self-reported survey administered to the adult population of urban China using a mixed methodology. Respondents who reported that they had been diagnosed with asthma were compared with those who had not on health status (using the SF-12v2), work productivity (using the WPAI) and self-reported health care resource use in the past six months. Regression modeling controlled for demographics, health behaviors, and comorbidities. **RESULTS:** A total of 326 patients reported a diagnosis of asthma (1.63%). Even after adjusting for covariates, patients with asthma reported significantly worse mean mental (42.63 vs. 46.30) and physical (45.52 vs. 49.63) component summary scores ($p < .05$). Health state utilities were also significantly worse (0.66 vs. 0.71, $p < .05$). Patients with asthma reported significant greater impairments at work, including more absenteeism (10.39% vs. 4.42%), presenteeism (31.31% vs. 19.81%), and overall work impairment (36.63% vs. 22.26%). The number of provider visits (2.52 vs. 1.49), emergency room (ER) visits (0.83 vs. 0.25), and hospitalizations (0.27 vs. 0.07) were all

significantly higher among those with a diagnosis of asthma in the past six months. **CONCLUSIONS:** The results suggest a significant burden among those who reported a diagnosis of asthma in urban China. As the prevalence of asthma continues to rise, a greater emphasis on disease management could result in a large improvement in health outcomes.

PRS9

COMPARISON OF KNOWLEDGE ABOUT TUBERCULOSIS AMONG LIBYAN AND NON LIBYAN TB PATIENTS IN NORTH EAST LIBYA

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OBJECTIVES: To compare knowledge towards etiology, transmission, risk factor, diagnosis, treatment and prevention of Tuberculosis (TB) among Libyan and non Libyan TB patients. **METHODS:** A cross sectional, descriptive study was undertaken with all registered TB patients from two hospitals in North East Libya. Knowledge towards TB was assessed by using a pre validated questionnaire which included respondent's demographics, general knowledge, transmission, diagnosis, risk factors, treatment and prevention of TB. Descriptive analysis was used for elaborating participants' demographic characteristics. Mean scores were taken into account for the assessment of knowledge. Mann-Whitney test was used for comparison among study groups. All analyses were performed using SPSS v. 17.0. **RESULTS:** Out of 140 TB patients 92 (65.7%) were Libyans while 48 (34.3%) were non Libyans. Majority (n=89, 63.6%) of TB patients fall in age group between 20-40 years with mean age of 36.14±11.2. Ninety two (65.7%) were males with majority 75 (53%) having intermediate level of education and average monthly income between 200-400 Libyan Dinar (n=73, 52.1%). Ninety (64.3%) had urban residency. Mean knowledge score for Libyan TB was 12.26±4.3 (out of 23) while Non Libyan TB patients scored 7.85±4.8 (out of 23). The overall mean knowledge score among all TB patients, however, was 10.75±4.9. Statistical significance difference was observed between the mean knowledge scores of Libyan and Non-Libyan TB patients ($P < 0.001$). **CONCLUSIONS:** The present study findings reflect that overall level of knowledge among study respondents was low. Moreover, Libyan TB patients scored better as compared to their counter parts. Further investigation using a regression model is advisable to highlight factors affecting knowledge among TB population in Libya. This will help in designing a health educational campaign for all TB patients in Libya.

PRS10

ASSESSMENT OF KNOWLEDGE REGARDING TUBERCULOSIS AMONG GENERAL POPULATION IN NORTH EAST LIBYA

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OBJECTIVES: To assess the level of Tuberculosis (TB) related knowledge among general public in North East Libya. **METHODS:** A cross sectional study was undertaken in 2009. A pre-validated questionnaire consisting of 23 items was sent to 1500 residents among five cities in North East Libya. In addition to the demographic details, the survey instrument was designed to collect information relating to transmission, diagnosis, risk factors, treatment and prevention of TB. All data was analyzed using SPSS version 16.0. Descriptive analysis was used to present demographic data. Inferential statistics (Chi-square test and one-way ANOVA) were used whenever appropriate. P value of less than 0.05 was considered as significant. **RESULTS:** Majority of the respondents (n=965, 96.5%) have heard about TB. Television (n=447, 44.7%), health workers (n=242, 24%) and family members (n=189, 19%) were the main sources of knowledge regarding TB. Libyans (n=883, 88.3%) dominated the cohort, however the gender distribution was equal (n=500, 50%) for males and females. The overall knowledge towards TB among general population was measured as low. Mean knowledge score was 11.4±3.9 which was significantly higher among Libyans (11.7±3.8) than non Libyans (9.7±4.7, $t=26.13$) ($P < 0.001$). In addition, respondents with tertiary education had significantly higher knowledge scores (11.8± 3.5) compared to those of intermediate (11.6± 4.4) and illiterate (7.7±5.5), [$F=19.34$, $P=0.001$]. **CONCLUSIONS:** This study reveals that knowledge towards TB within the population is poor. It is therefore suggested that specialized educational programs should be developed for community members to promote awareness towards TB.

PRS11

ASSESSMENT OF KNOWLEDGE ABOUT TUBERCULOSIS AMONG LIBYAN AND NON LIBYAN POPULATIONS IN NORTH EAST LIBYA

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OBJECTIVES: To assess the knowledge of Libyan and non Libyan populations residing in North East Libya with regards to the etiology, transmission, risk factor, diagnosis, treatment and prevention of Tuberculosis (TB). **METHODS:** A cross sectional study was undertaken in 2009. A pre-validated questionnaire was sent to 1500 residents residing in five cities of North East Libya. Questionnaire included respondent's demographics, general knowledge, transmission, diagnosis, risk factors, treatment and prevention of TB. All data was analyzed using SPSS version 17. Chi-square and one-way ANOVA were used whenever appropriate. P value less

than 0.05 was considered significant. **RESULTS:** Out of 1500 questionnaires, 1000 were received (response rate Of 66.6%). Majority of the respondents were Libyans (n = 883; 88.3 %) while 117 (11.7%) were non Libyans. Fifty three percent (n=474) of Libyans respondents were females while seventy four percent (n=87) of non Libyans respondents were males. Forty eight per cents (n=420) of Libyans and forty four percent (n= 51) of non Libyans were categorized in 25–40 years age group. Majority (n=529; 59.9%) of Libyans respondents had high level of education while non Libyans respondents (n= 61; 52.1) had intermediate education. Knowledge score was significantly higher among Libyans (11.7 ± 3.8) than non Libyans (9.7 ± 4.7, t = 26.13), (P < 0.001). A significant difference was noted when Libyans and non Libyans were compared with age, gender and tertiary educations level (P < 0.001). No significant differences were seen among other demographic variables and knowledge scores. **CONCLUSIONS:** The present study findings showed that overall level of knowledge of Libyans and non Libyans respondents was low; however, Libyans had more knowledge than non Libyans about TB. There is a need of massive health education campaign by policy makers in order to improve the population's knowledge towards TB.

PRS12

CLINICAL COPD QUESTIONNAIRE (CCQ): IS THERE A NEED TO DEVELOP A SPECIFIC ENGLISH VERSION FOR THE PHILIPPINES AND INDIA?

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OBJECTIVES: The Clinical COPD Questionnaire (CCQ) was designed in Dutch and UK English to measure health status in patients with COPD. Prior to use in an international study including the Philippines and India, the instrument underwent a linguistic validation. The objectives were: 1) to obtain English versions conceptually equivalent to the original and culturally relevant for use in the Philippines and India, and 2) to determine if the development of specific English versions was relevant. **METHODS:** The English versions for the Philippines and India were developed by a linguistic expert, and reviewed by the developer and a local clinician. In each country, cognitive interviews were performed with five COPD patients. The differences between the UK English original and adjusted English versions were analyzed and coded as cultural, lexical, or syntactic. **RESULTS:** The two versions showed differences when compared to the UK English: 14 for the English version for India, and 12 for the English version for the Philippines. None of them were cultural. In most cases the differences were lexical. For instance, in both countries, "circle" in the original was replaced by "encircle," "hardly ever" by "rarely," "down" by "sad." "Washing yourself" was changed to "bathing yourself" (India) and "taking a bath" (Philippines), "getting a cold" to "catching a cold" (India) and "getting colds" (Philippines), "short of breath at rest" to "short of breath while at rest" (India) and "short of breath while resting" (Philippines). All changes were validated by patients; some were specifically requested by patients during the cognitive interviews as the existing wording was considered confusing. **CONCLUSIONS:** The development of the English versions for the Philippines and India confirms the importance of a careful review and development of specific English versions for various English-speaking countries, even for questionnaires which do not seem conceptually challenging at first glance.

PRS13

DISCRIMINATING THE PRICE OF A PRODUCT BASED ON THE TARGET PATIENT SEGMENT BY LAUNCHING DIFFERENT DELIVERY MECHANISMS: A COMPARISON OF CHINA, INDIA AND KOREA

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OBJECTIVES: In many countries a large portion of COPD patients are paying cash for the most innovative medications. It is reasonable to believe that there is the potential to respond to the medical need, and expected value of public payers vs. self payers, by developing a new molecule delivered in different inhalers for different markets. This could be an interesting strategy for companies trying to maximise the level of access. Contrary to China and India, in markets with a single payer, such as Korea, a price discrimination based on different inhalers would not be reasonable. The objective of this study is to compare the effectiveness and sustainability of a device based price discrimination strategy in the COPD market in India (cash market), China (mixed system) and Korea (public coverage). **METHODS:** Qualitative discussions with a representative sample of payers based on two product profiles of the same molecule, delivered in two different devices: a high tech multi dose DPI and a simple monodose inhaler. **RESULTS:** Price discrimination was possible in India where the market is mainly cash but not in China or Korea. In China, the existence on the market of a low cost device makes the premium device unattractive for the public payer at the regional level. In Korea, the launch of the low cost inhaler would trigger a re-review of the premium inhaler by HIRA. **CONCLUSIONS:** Companies find attractive the idea of discriminating the price based on the level of health care coverage a patient has access to. However this study demonstrates that discriminating the price of a product based on the target patient segment is not only difficult in countries providing a universal health care coverage, but also in those countries where there is a mixed cash/public system. It is possible, however, in cash markets such as India.

SENSORY SYSTEMS DISORDERS - Clinical Outcomes Studies

PSS1

NICOTINE AS A INDICATOR OF TOBACCO EXPOSURE AND ITS EFFECT ON ORAL HEALTH

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OBJECTIVES: 1) Assessment of the periodontal status among 35-44 year old tobacco users using Community Periodontal Index; 2) Estimation of Nicotine levels in Blood and Urine by Spectrophotometry; and 3) Correlation between Nicotine levels in the Blood and Urine samples of the subjects and their Periodontal status. **METHODS:** A cross sectional institution based study was conducted to assess the periodontal status of different tobacco users and the nicotine concentration in their blood and urine. The study instrument consisted of a questionnaire for recording information on tobacco use. The second part was for recording the clinical data using Community Periodontal Index. The third part was to record the concentration of nicotine in blood and urine by spectrophotometry. Karl Pearson Chi-square test and Karl Pearson Correlation tests were used and data was analyzed using SPSS -17 software. **RESULTS:** In this study of 150 male subjects aged between 35-44 years aimed at assessing and comparing the periodontal status of tobacco users and non tobacco users the findings showed tobacco users with the highest prevalence of periodontal disease. The difference in community periodontal index scores of various tobacco users and non tobacco users was found to be statistically significant (p<0.0005). When blood and urine nicotine levels were compared with various forms of tobacco users, the nicotine levels was maximum in beedi smokers and minimum in cigarette smokers. However, there was no significant correlation when periodontal status was correlated with nicotine levels in blood and urine (p>0.0005). **CONCLUSIONS:** The findings suggested a marked association between tobacco use and prevalence of periodontal disease. The present study showed that blood and urine nicotine level is increased in various tobacco users compared to non tobacco users. The nicotine levels in blood and urine may be considered as good indicators to assess the exposure to tobacco in our population.

PSS2

EPIDEMIOLOGY, TREATMENT PATTERNS AND MEDICAL EXPENSES OF DIABETIC MACULAR EDEMA IN TAIWAN: A NATIONWIDE CLAIM-BASED DATABASE STUDY

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OBJECTIVES: To investigate the epidemiology, treatment patterns and associated medical expenses of diabetic macular edema (DME). **METHODS:** Data was collected and analyzed from 1 January 2004 to 31 December 2009 from Taiwan National Health Insurance Research Database, a source that covers more than 99% of Taiwan's 23 million citizens. Study subjects were recorded as having DME according to ICD-9-CM codes. The 6-year trends in prevalence, treatment patterns and associated medical expenses of DME were retrieved and calculated from 2004 to 2009. Age, gender and treatment distribution of treated DME visual impairment patients were estimated in 2009. **RESULTS:** In 1.43 million diabetes mellitus population, 0.11 million patients (7.3%) have DME and 18.6 thousand patients (1.3%) have received treatment for DME visual impairment. The direct medical cost of DME patient was 3.1 times higher than the average national health expenditure per person (NTD 100,005 vs. NTD 32,240). Most treated DME visual impairment patients were older than 50 years. The male-to-female ratio was 1.05. There were 85.5% of treated DME visual impairment patients receiving laser treatment. Among them, there were 73.6% laser only and 11.9% laser plus intravitreal injection (IVI) combination. Average number of laser in current treatment pattern is three, and surgery (indicator of deterioration) proportion remains high despite current treatment. **CONCLUSIONS:** DME visual impairment patient population aligned with prevalence in other countries; 1.3% of DM patients treated with laser or IVI or vitrectomy in Taiwan. Medical claims data have shown that un-licensed use of intravitreal treatments in DME is increasing.

SENSORY SYSTEMS DISORDERS - Cost Studies

PSS3

MEDICAL RESOURCE USE AND ASSOCIATED COSTS IN OPEN-ANGLE GLAUCOMA IN 10 ASIA-PACIFIC COUNTRIES

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OBJECTIVES: More than 40% of worldwide open-angle glaucoma (OAG) cases occur in Asia. The OAG prevalence and associated economic burden are expected to rise further. We extrapolated the findings from a German patient chart review in ocular hypertension (OHT) and OAG to 10 Asia-Pacific countries using expert interviews, in order to estimate the country specific OAG management costs. **METHODS:** Two to 5 key opinion leaders per country were asked to review a list of medical resources used in OHT/OAG (ophthalmologist visits, examinations/tests, outpatient or inpatient surgery/laser, eye drops) collected during the retrospective COGIS study in 159 German OHT/OAG patients, and approve the type and frequency of the resources or modify them to represent their local practice. The amount of resources used was presented by disease stage (OHT, early, moderate, advanced OAG) and number of treatment changes (no change, 1, 2, ≥3 changes) as the COGIS study demonstrated an increased intensity of resource use depending on both parameters. Local unit costs were collected and applied to each item to estimate the management costs (All-payer perspective, 2011 costs). **RESULTS:** Thirty ophthalmologists validated the data (Australia 2 experts, China 4, Hong Kong 3, India 5, Malaysia 3, New Zealand 3, South Korea 2, Singapore 2, Taiwan 2, Thailand 2). The increasing frequency of resources used with increasing disease severity and number of switches was generally approved. The average annual cost per patient ranged from 186US\$ to 1689US\$, mainly driven by topical medications, examinations/tests and clinical