

similar at about 4%, but moving towards high risk group for stress, we find that unhealthy eating was the higher life style risk reaching a 20%, followed by smoking and alcohol consumption at 18%. This trend was more notable for the moderate stress risk group where unhealthy eating reached a 60% and alcohol, smoking and sedentary was tight at 63%. More than half of the population taking the wellness checkpoint survey presented some type of unhealthy life style risk. For the 2340 screened people for depression, 21 were found to have risk for severe depression, 43 people had risk for moderate depression and 239 people had risk for mild depression. For the high-risk group, we found alcohol consumption risk as the leading one in 8% followed by 7% of smoking. This trend can be seen better in the high and moderate risk group for depression, where alcohol consumption risk is 18% and 17% for smoking. For the mild risk group is 38% for alcohol consumption and 36% for smoking and unhealthy eating.

**Discussion** From this first analysis, we observed interrelations that can contribute to open the perspectives in understanding of aetiology and pathogenical aspects, co-morbidities and treatments resources for stress and depression.

### 1361 ASSOCIATION BETWEEN PERCEIVED DEMANDS AND BARRIERS AND WORK-RELATED STRAIN IN SCHOOL-TEACHERS IN CHUQUISACA, BOLIVIA

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**Introduction** Teaching environments can influence performance and health of teachers. In Latin America little research was done to explore teaching conditions and health. The objective was to assess demands and barriers for teaching and work-related strain in school-teachers in Chuquisaca, Bolivia.

**Methods** Cross-sectional study was conducted in sixty randomly selected schools (August to November 2015). All teachers (1062) were invited to participate (response 56%).

Teaching demands and barriers were explored through a set of questions previously used by UNESCO-OREALC (4-points Likert scales). Demands included sociocultural differences, indiscipline, learning problems, desertion, and repetition. Barriers explored about lack of student families and colleagues support, poor social and economic conditions, lack of pedagogical support and leadership of the director. A validated version of the irritation index (7-points Likert scale) was used to explore work-related strain (emotional and cognitive irritation). Scores for demands, barriers and irritation were added and dichotomized in lower (1st and 2nd) and upper (3rd) tertiles.

Crude and adjusted odds ratios with 95% confidence intervals for work-related strain were estimated through logistic regression models. Missing data was imputed using chained equations imputation method. Sensitive analysis was performed using imputed and non-imputed data.

**Results** Most of teachers were female (72%), in public schools (81%), exclusively in primary level (48%). About one-third of teachers (37%) have bachelor or postgraduate training (37%). Teaching in primary level (adjusted OR 2.21; 95% CI: 1.4 to 3.6) and high academic barriers (1.73; 1.1–2.8), were statistically significant risk factors for work-related strain. University graduated teachers had lower risk (0.6; 0.4–0.9).

**Discussion** Structural barriers seem to play an important role in work-related strain in teachers, while they are able to cope with pedagogical demands. Comprehensive actions need to be taken considering families and social resources in order to take care of teachers' physical and mental health for a better performance.

### 1393 IMPACT OF OCCUPATIONAL STRESS IN ITALIAN OFFSHORE OIL INSTALLATION WORKERS AND CYTOKINES HOMEOSTASIS

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**Introduction** Environmental, behavioural and psychological stimuli can activate inflammation. Psychosocial factors such as work demands and decision latitude, social support, and psychological distress, play important roles in the development of inflammatory status. We conducted a study on occupational stress and its influence on cytokines homeostasis in Italian offshore oil installation workers.

**Methods** Enrolled workers from an offshore oil company were divided into two groups, which took rotations of four weeks to work on the platforms at sea. The onshore and offshore groups were broadly the same in terms of their ranking, work experience, age, and distribution of job categories. All subjects complete a self-administered questionnaire collecting information on socio-demographic characteristics, occupational stress, sleep disorders, and past injuries. The salivary cortisol and serum cytokines levels were measured by ELISA, cytokines gene expression was evaluated by Real-time PCR.

**Results** Salivary cortisol concentrations were significantly increased confirming the effectiveness of occupational stress. In fact, in our workers, cortisol level was directly correlated to job insecurity, State-Trait Anxiety (STAI-1), shift work and inversely proportional to sleep quality. In addition, we observed a direct correlation also between BMI and cortisol level. A significant increase of TNF $\alpha$  and a weak elevation of IL-10 level were observed in the offshore group. To examine whether changes in cytokines levels were due to changes in cell type composition, a reduction of ratio between lymphocyte percentages and neutrophils percentages (Ly/Ne%) were observed. Spontaneous expression of IL-1b, TNF $\alpha$  and IL-10 were higher in offshore respect to onshore workers. The increase in all PHA-induced cytokine release was significantly higher in the offshore workers. Only TNF $\alpha$  was significantly higher in LPS-stimulated PBMC of offshore workers.

**Conclusion** Taken together, the current study revealed that occupational stress not only activates neuroendocrine stress systems, but also influence cytokines homeostasis.

### 14 MEASURING THE FACTORS ASSOCIATED WITH THE OCCUPATIONAL WELLBEING OF NURSES WHO PROVIDE PALLIATIVE AND END OF LIFE CARE

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