

OCCUPATIONAL HEALTH HAZARDS AMONG SALT WORKERS WORKING IN REMOTE SALT SITES IN THE LITTLE RANN OF KUTCH, GUJARAT

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Salt manufacturing from subsoil brine is carried out in the remote and isolated areas of the little Rann of Kutch in Gujarat. From October to June every year the workers work at the remote work sites in the desert where even the primary amenities such as drinking water, food and health care are not readily available. In addition to the eye and skin related occupational health hazards, the National Institute of Occupational Health reported increased prevalence of hypertension and hypertensive retinopathy among the salt workers in this area. Different studies have shown a positive correlation between sodium intake and level of blood pressure. The increased salt absorption through damaged skin may be responsible for the increased prevalence of hypertension and related morbidities among these workers. To evaluate this hypothesis, an intervention study was carried

out with the objectives to suggest, provide and implement the protective measures against the occupational health hazards and study the efficacy of such measures.

A total of 24 salt workers (men) aged 18 – 50 years (mean age - 28.16 years) from different salt manufacturing sites at the end of the work season near Santalpur in the little Rann of Kutch were included in the study. After collecting the information regarding awareness about the work related health hazards and use if any, of the protective devices as a part of the knowledge, attitude and practice (KAP) study, the workers were provided with gumboots and goggles and asked to work using these devices for consecutive five days. On each day, the pre and post shift recording of information on the use of protective devices, duration of use, benefits and difficulties experienced with the use, measurement of blood pressure as per the WHO protocol and estimation of urinary creatinine, sodium and potassium was carried out. The values of urinary sodium and potassium mEq/mmol of creatinine were used to evaluate the impact of intervention measures in relation to the blood pressure.

Out of 24, 4 workers did not participate regularly and therefore were dropped from the study. From the remaining 20 workers, 14 participated for all five days, whereas 6 workers were present on the

1st and 5th day and these were classified as Regular and Irregular groups, respectively.

The intervention measures such as gumboots and goggles were acceptable to all the 24 salt workers since these measures were comfortable for working in saltpans and did not pose any major adverse effects. The regular users of these measures showed significant reduction in mean systolic blood pressure on day five as compared to day one: pre shift values - 121.3 ± 12.44 (day one) to 115.2 ± 9.71 (day five) mm of Hg; $p < 0.05$ and post shift values - 123.2 ± 8.24 (day one) to 116.3 ± 7.37 (day five) mm of Hg; $p < 0.01$ and post shift mean diastolic blood pressure (70.3 ± 8.41 to 65.2 ± 7.07 mm of Hg; $p < 0.05$). Also in this group there was a significant decrease ($p < 0.05$) in post shift mean urinary creatinine on 5th day (0.72 ± 0.385 mmol) as compared to the 1st day (1.03 ± 0.598 mmol) and significant increase in the pre shift mean urinary sodium excretion (from 316.9 ± 111.44 to 395.2 ± 47.06 mmol; $p < 0.05$). On the other hand the irregular group did not show significant changes in any of the parameters considered above except significantly increased ($p < 0.001$) pre shift sodium creatinine ratio (from 431.8 ± 285.29 to 730.3 ± 344.59). The results indicated that the five-day use of the protective devices was sufficient for the significant changes in blood pressure, urinary creatinine and electrolytes. The significant increase in sodium excretion may be responsible for decrease in blood pressures.