Effects of Sociodemographic Factors and Work-Related Stress on Work Ability Index among Stone Quarry Workers in a Rural Area: A Cross-Sectional Study

Sir,

Work stress is recognized worldwide as a major challenge to workers’ health and the healthiness of their organizations.[1] The World Health Organization Global Burden of Disease Survey estimate projected that mental diseases, including stress-related disorder, will be the second leading cause of disabilities by the year 2020.[2] Work Ability Index (WAI) is a well-known and valid self-report tool that has been widely used in various studies to identify and avoid early retirement and work-related disability.[3] Long working hours and low pay in stone quarries in India have resulted in increased work stress. Although Indian workers are hardworking and obedient by culture, hardly there are any Indian studies related to WAI and the factors affecting it. The relationship between work stress and work ability among stone quarry workers in rural areas of India is not well studied and documented. In order to explore the relationship between work-related stress, WAI, and sociodemographic profile, a cross-sectional study was conducted from November 2016 to March 2017, among the stone quarry workers residing for at least 6 months in the rural field practice area of department of community medicine of a medical college in Karnataka. There were a total of 18 stone-crushing centers in four villages of rural field practice area, out of which 13 were functioning with 132 workers. Work-related stress and work ability were assessed among 121 workers using Occupational Stress Index (OSI) and WAI, respectively.[4,5]

Work ability was measured by a questionnaire, which had seven items and scoring was done, which was divided into poor (7–27 points), moderate (28–36 points), good (37–43 points), and excellent work ability (44–49 points). OSI questionnaire consists of 46 items with five alternative responses. It was categorized as low (score: 46–122), moderate (score: 123–155), and high (score: 156–230) levels of stress. The subscales related to the components of job indicate stress such as role overload, role ambiguity, role conflict, unreasonable group, political pressure, powerless, poor peer relationship, intrinsic impoverishment, low status, strenuous working condition, and unprofitability.

The WAIs of stone quarry workers were categorized as poor, moderate, good, and excellent which was found to be 5%, 40.5%, 37.2%, and 17.4%, respectively [Figure 1]. Only 10.7% among the study participants had low level of work stress and 89.3% of them were experiencing some level of work stress. Mean WAI decreased as increase in age of the workers, graduates had better mean WAI of 40.5 ± 1.7 than the illiterate with mean WAI of 36.14 ± 5.4, and according to the marital status, unmarried workers had better mean WAI than married workers with 40.90 ± 3.4 and 36.38 ± 5.6, respectively. This association of WAI with age, education status, and marital status was found to be statistically significant. Mean WAI among males was 37.5 ± 5 and among females was 37.6 ± 6.7; however, the association was not statistically significant [Table 1]. The following subscales of occupational stress indices were negatively correlated with WAI; role overload (−0.31), role ambiguity (−0.40), unreasonable group and political pressure (−0.29), intrinsic impoverishment (−0.24), and low status (−0.28). The difference of these subscales with WAI was highly significant [Table 2].

The WAI score decreases with increasing age, similar to that found in a study by Gharibi et al. in Iran.[3] This could be due

### Table 1: Distribution of stone quarry workers by sociodemographic and Work Ability Index

| Variables                      | Mean WAI±SD | Median | P     |
|--------------------------------|-------------|--------|-------|
| Age (years)                    |             |        |       |
| <20                            | 42.1±3.3    | 43     | 0.001 |
| 21-30                          | 39.4±4.1    | 40     |       |
| 31-40                          | 36.5±3.2    | 36     |       |
| 41-50                          | 33.5±8.0    | 34     |       |
| >50                            | 34.3±6.6    | 35     |       |
| Sex                            |             |        |       |
| Male                           | 37.5±5.0    | 37     | 0.80  |
| Female                         | 37.6±6.7    | 37     |       |
| Education                      |             |        |       |
| Illiterate                     | 36.14±5.4   | 36     | 0.01  |
| Primary                        | 37.63±4.9   | 37     |       |
| Secondary                      | 37.68±5.8   | 37     |       |
| Higher secondary               | 41.70±3.3   | 43     |       |
| Graduate                       | 40.50±1.7   | 41     |       |
| Marital status                 |             |        |       |
| Unmarried                      | 40.90±3.4   | 41     | 0.001 |
| Married                        | 36.38±5.6   | 36     |       |
| Others                         | 36.67±0.5   | 37     |       |
| Occupational injury            |             |        |       |
| Yes                            | 37.13±5.5   | 37     | 0.75  |
| No                             | 37.68±5.3   | 37     |       |
| BMI (kg/m²)                    |             |        |       |
| <18.5                          | 39.39±5.4   | 40     | 0.4   |
| 18.5-29.99                     | 37.91±4.9   | 37     |       |
| >30                            | 33.50±6.0   | 35     |       |

WAI: Work Ability Index, BMI: Body mass index, SD: Standard deviation
to high energy levels in young workers. However, a study done among nurses in Iran had found no relationship between age and WAI. The current study showed statistically significant improvement in WAI score with increase in education status of the study participants. The level of understanding the work and responsibility was better among the literates. Similar findings were reported in studies done by Habibi et al. and Golubic et al.\[6,7\]

The present study found that most of the subscales of occupation stress indices were negatively correlated with WAI; this is because work stress makes the stone quarry workers unable to concentrate and perform work at their best level. Similar findings were found in studies by Habibi et al. and Huaiang Li et al.\[6,11\] Nearly 93.2% of the stone quarry workers were found to be experiencing moderate-to-severe work-related stress.

As the work ability was negatively associated with high levels of perceived work stress, stress management programs should be implemented at work places. The programs should primarily focus on improving human relationships by training leadership skills, conflict resolutions, and communication skills, which would improve the quality of life and work ability of the workers.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

**M. N. Soumyashree, R. G. Viveki, Manjunath Kamble, V. S. Arpitha, Sunanda Halki**

Department of Community Medicine, BIMS, Belagavi, Karnataka, India

Address for correspondence: Dr. R. G. Viveki, Department of Community Medicine, BIMS, Belagavi, Karnataka, India. E-mail: rgviveki@gmail.com

**REFERENCES**

1. World Health Organization. Work Organization & Stress. Available from: http://www.apps.who.int. [Last accessed on 2017 Jun 04].
2. Kalia M. Assessing the economic impact of stress – The modern day hidden epidemic. Metabolism 2002;51:49-53.
3. Gharibi V, Mokarami H, Taban A, Yazdani Aval M, Samimi K, Salesi M, et al. Effects of work-related stress on work ability index among Iranian workers. Saf Health Work 2016;7:43-8.
4. Bresić J, Knezević B, Milosević M, Tomljanović T, Golubić R, Mustajbegović J, et al. Stress and work ability in oil industry workers. Arh Hig Rada Toksikol 2007;58:399-405.
5. Srivastava AK, Singh AP. Construction and standardization of occupational stress index, a pilot study. Indian J Clin Psychol 1981;24:1336.
6. Habibi E, Dehghan H, Safari S, Mahaki B, Hassanzadeh A. Effects of work‑related stress on work ability index among refinery workers. J Educ Health Promot 2014;3:18.
7. Golubic R, Milosevic M, Knezevic B, Mustajbegovic J. Work-related stress, education and work ability among hospital nurses. J Adv Nurs 2009;65:2056-66.
8. Li H, Liu Z, Liu R, Li L, Lin A. The relationship between work stress and work ability among power supply workers in Guangdong, China: A cross-sectional study. BMC Public Health 2016;16:123.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**How to cite this article:** Soumyashree MN, Viveki RG, Kamble M, Arpitha VS, Halki S. Effects of sociodemographic factors and work-related stress on work ability index among stone quarry workers in a rural area: A cross-sectional study. Indian J Community Med 2018;43:124-5.

Received: 14-07-17, Accepted: 15-03-18

© 2018 Indian Journal of Community Medicine | Published by Wolters Kluwer - Medknow