

**Research Article****Assessment of noise exposure and impact on staff at B.O.T power plants in Fars province in 2015****Abolfazl akbarzadeh<sup>1</sup>, Amin Hossaini Motlagh<sup>2\*</sup>,****Abdollah Poursamad<sup>3</sup> and Hossein Mari Oryad<sup>4</sup>,**<sup>1</sup>The Islamic Azad University of Marvdasht- Fars, Iran.<sup>2</sup>Assistant Professor, Ph.D in Env Health, Social Determinants of Health Research Center, Yasuj University of Medical Sciences, Yasuj, Iran.<sup>3</sup>Assistant professor, Ph.D in Health Economics, Yasuj University of Medical Sciences, Yasuj, Iran.<sup>4</sup>Associate professor, Social Determinants of Health Research Center, Yasuj University of Medical Sciences, Yasuj, Iran.**ABSTRACT:**

The study examines the level of noise exposure and its impact on hearing loss at B.O.T power plants in Fars province was discussed. In this cross-sectional study, hearing loss was 75 personnel of the plant was measured and recorded using audiometry and exposure to noise and noise pollution and a number of occupational and demographic variables were questioned. Finally, the model was estimated using Poisson regression. The study findings showed that the sample of only 12 people has been faced with partial hearing loss and severe hearing loss was observed in the samples. The results of the regression model showed that by increasing exposure to noise, hearing loss increased.

**Keywords:** hearing loss, noise, power plants BOT, Persian, and Poisson regression**INTRODUCTION:**

Hearing loss induced noise is an occupational hazard that threatens the health of many employees so that noise is one of the most common and the most common work-related risk factors to be considered in the world [1].

Although the potential noise-induced hearing loss is preventable, but now is considered one of the most important health problems and is one of ten major occupational disease in Canada and the US [2]. Long-term exposure to noise-induced hearing loss is incurable and irreversible both temporary and permanent noise-induced drop your show. Hearing loss as the classic bass frequencies expanded [3, 4].

Noise importance to the fact the Social Security Organization of Iran, being in a noisy environment such important factors determining has set hard and hazardous jobs and facilities such as health services more specific, early

retirement and has established for its employees.

Age and work experience as the most important issues are raised in relation to work-related hearing loss [2]. The most common age-induced hearing loss is damage to the ear and inner ear nerve cells occurs primarily at frequencies 4000 to 8000. World Health Organization to determine the degree of hearing loss average hearing threshold at frequencies 500, 1000, 2000, and consider in 4000. According to the division by the organization normal average drop of less than 25 dB, 26-40 dB slight hearing loss 41-60 dB 61-80 dB moderate hearing loss, severe hearing loss and the average drop of more than 81 dB profound hearing loss or deafness has been introduced [3, 5]. Since the review and evaluation of the industry in terms of health issues is practically support the national capital, the study is intended to evaluate the exposure to

noise to prevent hearing loss and its influencing factors in the study population (Fars B.O.T plant) to be paid.

**Method:**

This study was a cross-sectional descriptive study was conducted. The study population consisted of maintenance personnel, BOT contractor of power plant operation supervisor Fars forces that were exposed to noise. Meanwhile, 75 people were hired as power plants were selected. In order to study the more complete the screening study was conducted using a sound level meter and dialogue with them on this issue according examination of personnel and parts of the unit during 2015 and using technology to characteristic sound level meter tes Model 1358 and tes Model 1356 was used. World Health Organization to determine the degree of hearing loss average hearing threshold at the frequency you considers 500, 1000, 2000 and 4000. According to the division by the average loss of less than 25 dB natural, 26-40 dB slight hearing loss 41-60 dB 61-80 dB hearing loss, moderate to severe hearing loss and the average drop of more than 81 dB profound hearing loss or deafness is

introduced. Along with examinations of a Czech list was used. Checklist set with the views of occupational health experts had previously designed and where the hearing as well as other demographic variables that were collected. Work experience, age, education, type of job and the number of daily working hours were also collected. Collected data into Excel software and the next hearing was indexes. Finally, using regression models, the impact of different variables on hearing the voice of employees and workers BOT power plant was measured.

**Findings:**

Table 1 shows descriptive study findings. In this table, average, standard deviation, maximum and minimum values of each of the data was shown. As specified in the table, the average age of the sample 34.35 years. The average work experience was 4.855 years. In addition, the sample average of noise exposure was equal to 5.81 hours a day and hearing loss in the studied sample was equal to 12.71 dB. In a sample of 5 patients with diploma degree, 16 degree, 46 people with bachelor's degree and the rest had a master's degree.

**Table 1** Descriptive study findings

Variable	Number of Views	Average	Standard deviation	Minimum	Maximum
Age	76	34.35526	5.775128	27	62
Work experience	76	4.855263	2.176872	1	14
Hours of exposure to noise	76	5.815789	1.786695	0	8
Hearing loss	76	12.71053	10.60668	0	37

Table 2 shows the regression model. Since the data were discrete numerical study, Pearson regression model that is designed to prevent bias is disturbing elements were not normal. As specified in the table, the coefficient is positive and significant noise exposure hours. This means that with increasing noise exposure is associated with increased rates of hearing loss. Coefficient is negative and significant work experience and this reflects the fact that with increasing service record is associated with reduced hearing loss. Other study variables including level of education and age were not significant hearing loss in the Persian BOT power plant employees. In the study sample, the maximum level of 37 dB hearing loss and this implies that none of the samples examined have not been severe hearing loss and all suffered from hearing loss, the number of people with hearing loss were part of 12 people.

**Table 2** Results of estimates Poisson regression model to examine the relationship between different variables and hearing loss

Variable	Coefficient	Standard deviation	valuez	Significant
Hours of exposure to noise	0.420629	0.027148	15.49	0.000
work experience	-0.04772	0.020084	-2.38	0.017
Age	0.0087	0.008282	1.05	0.293

Education				
Associate	-0.06043	0.131819	-0.46	0.647
Bachelor	-0.07164	0.122711	-0.58	0.559
Masters	0.020344	0.164545	0.12	0.902
Constant coefficient	-0.14879	0.419719	-0.35	0.723

## DISCUSSION:

Any problem in the outer or middle ear prevents sound from correct guidance to conductive hearing. Transmission usually from 25 to 65 decibel hearing loss and mild or moderate thrived. In some cases, conductive hearing loss can be temporary. Due to factors specific problems, medical or surgical treatment is helpful. In conductive hearing can even hearing instruments such as middle ear implants or bone implants transitional. Hearing loss is a problem in the work force in factories that are associated with noise and noise pollution is extremely common [6]. The results of this study showed that people who worked at the plant investigated fortunately study with severe hearing problems were encountered. Only 12 were suffering from slight hearing loss. These findings suggest that hearing loss directly related to noise exposure, and intense. Therefore, it is recommended that health professionals have noticed the factory. One solution put service provision for people who are exposed to noise [7]. This facility reduces these problems is effective in improving health [8]. Since noise is one of the factors considered difficult and harmful jobs granting early retirement for workers exposed to noise pollution can be useful [9, 10]. Another solution is to rotate between different sections of workers. Workers are exposed to noise better time of day to be transferred to other places where noise is less [11, 12]. Incentive awards to these workers improve their job motivation can be useful [13, 14]. This study was not without limitations. The first point is that it limits the amount of exposure to noise pollution over time could calculate for each worker, next restrictions absence of other control variables such as gender, etc. that may contribute to hearing loss. Because all the samples studied were male. Future studies are suggested for dealing with the impact of noise pollution on early retirement.

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