

# Factors affecting work ability among the workers engaged in different occupations

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## ABSTRACT

Work ability varies from occupation to occupations. Prevalent work related factors and reduced work ability of workers lead to different problems at work, results in low productivity, impaired health and safety of workers and sometimes early retirement. Therefore, improving work ability is one of the most effective ways to enhance the ability and preventing disability and early retirement. Keeping this in view a study was conducted among 60 workers engaged in two selected sectors of occupations (30 respondents from bank and 30 respondents from hospital) were selected purposively from Jorhat district of Assam with the objective- "To analyze the factors affecting work ability among the workers engaged in different occupations". Data were gathered by interview method. Work ability index was used to study the work ability of workers. Results shows that the workers were found to be subjected to adverse working conditions which lead to reduced work ability. The factors responsible for reducing work ability are shift work, long hours, with high pace of activity and work demand, mental load, physical load, etc. Work-related health hazards (body pains and injuries) and lost work time represent a significant changes in work ability the workers.

## INTRODUCTION

The concept of work ability relates to the capacity a worker has to perform his work tasks, given his work demands, health status and physical and mental abilities. It expresses the interrelation between the productive potential of a worker, the worker's individual characteristics and work-related factors (Pohjonen, 2001) thus, the assessment of work ability measures the ability of workers to perform their jobs, taking into account the specific psychosocial and physical work-related factors,

mental and physical capabilities and health.

Work ability, which is regarded as a dynamic process of human resources in relation to work, is influenced by a number of factors, which include socio demographic characteristics, lifestyle, the aging process and work demands. Among these different factors, health is considered as one of the primary determinants of work ability. Previous research suggests that individual, psychosocial and physical factors differentially contribute to work capacity. Individual factors include age, gender, marriage, education, occupation, retirement

time, exercise, obesity, disease, physical ability, smoking, and drinking. Psychosocial factors include variables such as relationships and work-related stress.

Finally, physical factors comprise job specification, work-related duties, and work environment (Savinainen *et al.*, 2004).

According to Mazloumi *et al.* (2012) one of the main factors affecting WAI is the high demands of job and its inconsistency with the work ability of the individual. The results of regression modelling showed that the subscale of job demand was one of the negative factors predicting mean WAI score; it is in line with the results obtained by other researchers. The model proposed by Toumi *et al.* (2001) for promoting work ability showed that the variables of job demands and environment are the most important predictors of work ability. A previous study showed that in the construction industry, work related risk factors were the most important determinants of work ability. Awkward back posture, static work postures, repetitive movements and lack of support at work had the highest influence on work ability (Ilmarinen, 2001). A study on “The effects of work-related and individual factors on the work ability index” showed that factors associated with a poor work ability, as defined by WAI were lack of leisure-time vigorous physical activity, poor musculoskeletal capacity, older age, obesity, high mental work demands, lack of autonomy, poor physical work environment and high physical work load (Van den berg *et al.*, 2008).

Researches in Eastern Asia have shown that the change of WAI score by age were not statistically significant (Kumashiro *et al.*, 2006; Chumchai *et al.*, 2007 and Duong *et al.*, 2007). A study on “Factors affecting work ability in Korean workers” indicated that work ability and length of service increased with age. It was also found that employees in administrative positions had greater work ability than site workers, workers directly managed by a supervisor had greater work ability than workers in co-operative firms, and workers who performed intellectual tasks had greater work ability than workers who performed physical labour. Job stress was additionally observed to contribute towards overall work ability. And musculoskeletal disorders (MSDs) were found to negatively affect work ability (Lee and Chang, 2015). Factors such as sex, having other jobs, performing repetitive and monotonous tasks, understaffing, and reporting several morbidities were associated with

inadequate work ability. These results corroborate the concept that work ability is a dynamic process, resulting from the interaction between individual factors and work-related factors (Pedroza *et al.*, 2011). Work ability was found strongly associated with mental and physical health. Determinants of mental health were very similar to those of work ability, whereas physical health was influenced primarily by lack of life physical activity. However, the knowledge of determinants of work ability in mental demanding occupations is scarce and hence, it remains unclear whether in these jobs the relative importance of personal and work-related factors is similar to their well-known contribution in physically demanding jobs.

An approach of primary prevention will be more appropriate to address root cause of the problem. Understanding of the mechanism of causation of reduced work ability will bring in a better position to design effective strategies for improving work ability. Therefore, it is an utmost necessity to study the risk factors at workplace, so as to enhance the productive performance of the workers along with improving their work ability.

## MATERIAL AND METHODS

For the study a total of 60 respondents, 30 respondents engaged in Health care services and 30 respondents engaged in Bank were selected purposively. Personal interview method was used to collect the data. The data were gathered from the respondents personally by the investigator.

Data on work ability index (WAI) was collected by using the WAI questionnaire. The WAI scores were calculated according to the standard method provided by the Finnish Institute of Occupational Health (FIOH). The main part of the WAI consisted of 7 items, including current work ability compared with the lifetime best (0-10), work ability in relation to the demands of the job (2-10), number of current diseases diagnosed by a physician (1-7), estimated work impairment due to diseases (1-6), sick leave during the past year (1-5), personal prognosis of work ability 2 years from now (1, 4 or 7) and mental resources, referring to the workers life in general, both at work and during leisure time (1-4). (The number in parentheses for each item indicates the scoring range). The WAI score ranges from 7 to 49 points. Based on the WAI, the respondents were grouped

according to the following categories:

Categories	Scores
Poor	: 7–27
Moderate	: 28–36
Good	: 37–43
Excellent	: 44 to 49

### Statistical analysis:

Frequency, percentage, mean and standard deviations were computed to elicit information according to the objectives of the study.

## OBSERVATIONS AND ANALYSIS

The results relating to the objective of the study obtained through analysis of data collected from the

selected samples.

In the present study effort had been made to analyze the data on work ability index of selected respondents belonging to different service sectors according to socio-demographic characteristics and work related factors.

### WAI according to socio-demographic factors:

The data presented in Table 1 revealed the relationship of WAI with the socio-demographic characteristics of the respondents engaged in different service sectors.

### Work ability index score according to age:

From the Table 1 it was revealed that the highest mean WAI of the workers from both the occupational sectors *i.e.* 44 and 40 belonged to age group of 20-24 years, followed by mean WAI of workers from bank was 40.16 and from hospital was 35.87 belonged to age group

Characteristics	Respondents		WAI (mean)		WAI (SD)	
	Bank	Hospital	Bank	Hospital	Bank	Hospital
<b>Age group</b>						
20-24	1 (3.3)	3 (10)	44	40	0	2.94
25-29	12 (40)	8 (26.6)	40.16	35.87	3.21	2.64
30-34	8 (26.66)	7 (23.3)	39.62	31	2.97	2.67
35-44	2 (6.66)	5 (16.6)	35	29.6	1.41	1.85
45-50	2 (6.66)	3 (10)	33	28.33	0	0.57
50 and above	5 (16.66)	4 (13.3)	30.6	24.8	2.19	0.83
<b>Sex</b>						
Male	23 (76.6)	-	38	-	4.74	-
Female	7 (23.3)	30 (100)	36.85	31.86	4.94	5.06
<b>Marital satus</b>						
Single	17 (56.6)	11 (36.6)	40.47	37	3.31	3.34
Married	13 (43.3)	19 (63.3)	34.15	28.89	3.86	3.10
<b>Educational level</b>						
Under metric	-	1 (3.33)	-	25	-	0
Metric	-	3 (10)	-	27.66	-	3.51
Higher Secondary	-	16 (53.3)	-	31.75	-	5.74
Graduate	30 (100)	10 (33.3)	37.73	34	4.73	2.94
<b>BMI</b>						
CED Gr.III	-	2 (6.66)	-	38	-	1.41
CED Gr.II	-	1 (3.3)	-	37	-	0
CED Gr.I	-	4 (13.3)	-	32.5	-	3.10
Weight normal	17 (56.6)	20 (66.6)	38.29	31.1	4.44	5.28
Obese Gr.I	11 (36.6)	3 (10)	37.27	30.33	5.58	5.50
Obese Gr. II	2 (6.66)	-	35.5	-	2.12	-

of 25-29 years. The lowest mean WAI score of workers from both the occupational groups *i.e.*, bank and hospital was 30.6 and 24.8, respectively belonged to age group 50 years and above. Though there was no significant difference between the younger and older age groups but it can also be seen that as the age increases the WAI score decreases. The age of the workers affect work ability. This result is also in conformity with Toumi *et al.* (2001) who observed the same trend in a study conducted on promotion of work ability during aging.

#### **WAI score according to sex:**

Analyses of data indicated that majority of the respondents *i.e.*, 76.6 per cent from bank were male with mean WAI score 38 and only 23.3 per cent were female with mean WAI score of 36.85. In hospital cent per cent of the respondents were female workers and their mean WAI score found was 31.86. From the data it was observed that the male workers have highest work ability index as compared to female workers. The study on work ability in different age groups in a public health institution in Brazil conducted by Monteiro (2006) also observed significantly low work ability among the women workers. It may be due to the fact that female workers perform dual role as they share income generation work load as well as house hold activities.

#### **WAI score according to marital status:**

In bank 56.6 per cent of respondents were single and had higher mean WAI score *i.e.*, 40.47 in comparison to married workers (43.3%) who had 34.15 as mean WAI score. In hospital 36.6 per cent of respondents were single with mean WAI score 37 and 63.3 per cent of respondents were married with mean WAI score 28.89. It was observed that the married workers from both the occupational groups have low work ability index as compared to those who were single. Same trend *i.e.*, the score of WAI of the unmarried was significantly higher than that of married women, was also observed by Wu *et al.* (2011).

#### **WAI score according to educational level:**

Studies reported that the the low level of education increased the risk of reduced work ability (Ilmarinen, 2003 and Kalache, 1991). The present study also observed the same trend. As the educational level increases the WAI was also increases. The study revealed

that in bank all the respondents were graduates and their mean WAI score was found 37.73. In hospital more than 53 per cent of the respondents had higher secondary level education with mean WAI score 31.75 which were followed by 33.3 per cent, belonged to graduate level with mean WAI score 34. Ten per cent and 3.33 per cent respondents belonging to metric level and under metric level had mean WAI scores of 27.66 and 25 respectively. It may be because the higher educational level means good quality job.

#### **WAI score according to BMI:**

The study observed that BMI of 30 kg/m<sup>2</sup> or greater, had a negative impact on the mean score of WAI; it is in line with the findings of other studies (Kaleta *et al.*, 2004 and Kaleta *et al.*, 2006). In bank majority of the respondents *i.e.*, 56.6 per cent of the respondents belonging to normal weight category BMI had mean WAI 38.29 which was followed by 36.6 per cent belonging to category obese (Grade I) with mean of WAI 37.27 and 6.66 per cent with BMI category of obese (grade II) with mean WAI 35.5. In case of hospital workers also same trend was observed *i.e.*, more the BMI less the WAI score.

#### **WAI according to work related factors:**

Effort was made to analyze the data on WAI according to work related factors and presented in Table 2.

#### **Work schedule:**

Studies conducted on shift types on WAI of workers engaged in different service sectors revealed that shift working schedule influences WAI scores. Highest WAI scores was observed for morning shift workers and the lowest, for circulating-shift workers (Alavinia *et al.*, 2007; Costa, 2003 and Costa *et al.*, 2005). In the present study analyses of data on WAI score of selected workers engaged in different service sectors revealed that in hospital cent per cent of the workers had shift duty whereas in bank all the workers were engaged in day shift with WAI mean score of 37.73.

Reduced WAI score of 31.86 was observed among the workers engaged in hospital. Because the workers in hospital are supposed to take night work, long shifts, and the unpredictability of their activities, which increase the possibility of their becoming fatigued, and this can reduce their physical performance and capacity, thereby

decreasing the work ability.

**Work hours:**

Working for long hours is one of the causative factors in reduced work ability among the workers engaged in different occupations (Crigger, 2004). The present study revealed that in bank majority of respondents work for 7-9 hrs with means WAI score of 38.77. Remaining only 26.6 per cent of workers work for more than 10 hrs had mean WAI score 36.7. In the contrary, the workers in hospital work for 7-10 hours and sometimes more. Moreover, they do shift duty. The analyses of data revealed that with increase in work hours the WAI score seems to decrease. The respondents working for 6 hrs had mean WAI score 32.86, followed by respondents working for 7-9 hrs had mean WAI score of 31.38. In hospital only 6.6 per cent of workers work for 10hrs or more than 10 hrs and their WAI score was

found 27.5. It was observed that those who work for more than 10 hrs have lowest work ability index score; this mostly happens in case of workers in hospital.

**Work demand:**

One of the main factors affecting WAI is the high demand of job and its inconsistency with the work ability of the individual. The results of present study showed that the job demand was one of the negative factors influencing the mean WAI score; it is in line with the results obtained by other researchers (Mazloumi *et al.*, 2012). In bank more than 66 per cent of the respondents involved in work that is mentally demanding with mean WAI score 38.25 and 33.3 per cent of respondents involved in both physical and mental demanding work and WAI was 36.7. In hospital majority of the respondents involved in physical demanding activities with mean WAI score 32.66 and 40 per cent of respondents involved in

**Table 2 : Work related factor and their association with (Work ability index)**

Characteristics	N (%)		WAI (Mean)		WAI (SD)	
	Bank	Hospital	Bank	Hospital	Bank	Hospital
<b>Work schedule</b>						
Day work	30(100)	-	37.73	-	4.73	
Shift work	-	30(100)	-	31.86	-	5.06
<b>Work hours</b>						
≤6	-	15(50)	-	32.86	-	5.62
7-9	22(73.3)	13(43.3)	38.77	31.38	4.04	4.38
≥10	8(26.6)	2(6.6)	34.87	27.5	6.46	3.53
<b>Work demand</b>						
Physical	-	18(60)	-	32.66	-	5.1
Mental	20(66.6)	-	38.25	-	4.82	-
Both	10(33.3)	12(40)	36.7	30.66	4.6	4.94
<b>Occupational injury</b>						
Yes	25(83.3)	25(83.3)	36.64	30.88	4.31	4.50
No	5(16.6)	5(16.6)	43.2	37.4	2.38	5.02

**Table 3 : Work ability index according to musculoskeletal problems prevalent among the respondents**

Number of body sites	N (%)		WAI (mean)	
	Bank	Hospital	Bank	Hospital
No pain	5 (16.6)	5 (16.6)	43.2	37.6
One site	7 (23.3)	6 (20)	39.71	34.83
Two site	6 (20)	9 (30)	37	31.55
Three site	8 (26.6)	4 (13.3)	36.5	29
Four site	2 (6.6)	3 (10)	33	27.33
Five site	1 (3.3)	2 (6.6)	31	26.5
Six site	1 (3.3)	1 (3.3)	27	24

both physical and mentally demanding work with WAI as 30.66. It was observed that those who are involved in both mental and physically demanding work have lower work ability.

### Prevalence of musculoskeletal problems:

Health and work were the most important determinants of work ability. Majority of the respondents from both the occupational groups have pains in different body sites. Those who have work related musculoskeletal problems they have lower work ability than those have no pains (Alavinia *et al.*, 2007).

From the data presented in Table 3 it was revealed that workers engaged in both the service sectors had pains in different body parts. The common body site was found the cervical pain among the workers engaged in bank. Apart from this they usually had pains in shoulders, wrist and lumber region. Analyses of data revealed that in bank 26.6 per cent of the respondents had three sites pain in their body with mean WAI 36.5 which is followed by 23.3 per cent of the respondents have pain in one site with mean WAI of 39.71. In hospital the workers were found to have back pains along with shoulder, wrist and leg pains. Pains in two sites were observed among 30 per cent of workers and their WAI was observed as 31.55. The study indicated that those who have more number of pains in their body have lower work ability than those who have less pain.

### Conclusion:

The workers were found to be subjected to adverse working conditions. Working for long hours is one of the causative factors in reduced work ability among the workers engaged in different occupations. Working for long hours in same work area and same activity daily also adding to the workers engaged in bank. Increase in work hours the WAI score seemed to decrease. The job demand was one of the negative factors influencing the mean WAI score. Those who were involved in both mental and physically demanding work had lower work ability. Health and work were the most important determinants of work ability. There are evidences from the preceding discussions that work-related health hazards (body pains and injuries) and lost work time represent a significant changes in work ability the workers. Therefore, it is an utmost necessity to study the working conditions in terms of prevalent risk factors at

workplace, so to enhance the productive performance of the workers along with improving their work ability.

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