SAS Journal of Medicine ISSN 2454-5112
SAS J. Med., Volume-3; Issue-6 (Jun, 2017); p-125-134
Available online at http://sassociety.com/sasjm/

Original Research Article

Influence of employee gender and age on the outcome of pre-employment medical assessment in the oil and gas industry

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Abstract: For job applicants, exclusion from employment in oil companies in the GCC region may happen in one of two stages, either the job interview or the pre-employment medical examination. This study investigates the latter scenario. The primary goal of the project is to investigate the possible discrimination against women and older age job applicants during the pre-employment medical examination. The design is cross-sectional study using secondary data. Setting: pre-employment medical check-up at Qatar petroleum medical centre in Doha, Qatar. A total of 2462 individuals aged from 20–55 years (1872 male and 590 female) who attended the pre-employment medical examination in 2012. Main outcome measure is the fitness status (the rate of rejection of work during the pre-employment medical examination) exposures; gender and age of the job candidate. The results shows that 3.8% of males are unfit and that 3.7% of females are unfit. The p-value of the Chi Square Test = 0.889 > 0.05. This result means that the relationship between gender and status is not significant. Even after controlling for the effects of potentially confounding factors, whereas non-significant inverse associations were observed in men. There were generally no significant associations between the outcomes of the pre-employment medical examination and the gender or age of the job applicants. These results suggest that occupational health professionals who are in charge of the pre-employment examination in oil companies in the GCC region do not exclude candidates from job offers because of their gender or age.
Keywords: Body mass index, Electrocardiogram, Gulf cooperation council, International Commission on Occupational Health, Pre-employment health screening.

INTRODUCTION

A widely accepted definition of pre-employment examinations is as follows: 'the assessment of a job applicant's capacity to work without risk to their own or others' health and safety' [1]. Candidates for a job may be rejected if they are found to suffer from a condition that can be worsened by the work environment or one that may put other workers at risk. For oil companies, the goal of implementing a pre-employment medical program is to select, for a particular post, a person who is in good physical and mental health and free from any health problem that is likely to interfere with efficient performance or the safety of the workplace or co-workers. Pre-employment medical assessment is considered an important practice of any occupational health services, particularly in large companies. These assessments are used to identify risks that potential employees might face in a new work environment and risks that they may pose to other employees. However, these tests are often used to deny people work [2].

Pre-employment provides a highly effective functional testing system that determines the physical abilities of an individual to safely perform the essential functions of a job. When designed correctly, the pre-employment medical examination can be effective type of evaluation for employee testing that follows employment laws and regulations. In the case of oil and gas industry, similar to many other industries, the use of pre-employment examinations may often be driven more by cultural practices than scientific evidence of the examinations' efficiency [3]. Outcomes from fitness for work assessments range from "fit" to "unfit", with other possible intermediate categories [4].

In general, occupational health center conducts the medical examination, and a report is sent to the human resources (HR) Department outlining "Fit", "Unfit", or "Fit with Restriction." When a candidate is found to be unfit to work, the HR Department will inform the candidate suitably. The candidate then loses the job opportunity, even if he or she has passed the job interview successfully. When a candidate is found to be fit of fit with restrictions, HR will proceed with employment process and the candidate can join the proposed post. However, there is a continuous debate regarding the appropriateness of the pre-employment

program and continued uncertainty regarding its effectiveness. In 2009 Joseph Pachman [3] published a review of evidence base for the use of pre-employment; he indicates that 'there is a lack of evidence on their effectiveness in preventing health-related occupational risks.'

If the selection criteria for the pre-employment program are aimed solely at reducing absenteeism form work, then their efficacy appears to be low for many job categories [5]. There is confusion about the decision-making process used to judge fitness for work. There is very scarce scientific evidence based on empirical data, most likely because there are no standard or valid methodologies [4].

In addition, there is no agreement on the best type of pre-employment assessment to adopt. Some authors recommend a simple questionnaire over the extended pre-employment assessments. According to Moshe *et al.;* [6], The use of a self-administered questionnaire evaluated by an occupational physician (OP) is the preferred method of pre-employment evaluation for non-hazardous occupations. The pre-employment assessment is comprehensive and employs detailed medical and laboratory examinations for all job applicants. The pre-employment medical examination includes the following: written questionnaire, physical examination, blood tests, urine examination, chest X ray, electrocardiogram (ECG) and hearing test.

However, many authors now advice for a narrower pre-employment medical program, particularly for office workers. Furthermore, It is preferred that different medical assessment used for different work positions. According to Rayson [7], any medical assessment should be tailored to the requirements and risks of the job. In addition, 'the purpose of the pre-employment examination should remain narrowly job related. Even long-established procedures require periodic utilisation review' [8].

Generally, a health assessment by questionnaire should suffice, especially when the job is not physically demanding, because it is more comfortable for the candidates and less costly to the employer. Other authors [9] suspect that despite their widespread use, the effectiveness of such questionnaires remains uncertain. 'Pre-employment health screening (PEHS) by questionnaire has a low predictive value in detecting future adverse health and occupational outcomes [9]. The pre-employment assessment has also raised serious ethical questions. It is unethical for a physician to use medical tests to exclude candidates because they have clinical conditions that do not present a direct relationship to the job [2]. There are, however, only limited data available in Qatar as well as in the Gulf Cooperation Council (GCC) countries about pre-employment practice, fairness and effectiveness.

In addition, there is a need to develop pre-employment evaluations that would allow physicians to examine employees in a consistently beneficial and more standardised manner. 'The paucity of evidence demonstrating the usefulness of pre-employment examinations suggests the need for further research' [10]. The pre-employment medical examination is a key part of the recruitment process in the oil and gas industry. It can allow discrimination to occur, and employees can be excluded from a job unfairly. This study is intended to examine one aspect of the pre-employment examination program, the effect of age and gender of the recruit on the outcome of the pre-employment examination. The study used the existing health records form the occupational health centre to investigate the pre-employment medical assessment in the company.

Within the field of employment, discrimination applies to several factors, such as gender, racial origins, disability and age. Discrimination and equality are based on the principle of equal treatment [11]. 'Labour market discrimination is defined as a situation where equally productive workers are treated unequally in a way that is related to an observable characteristic such as race, ethnicity or gender [12].' Discrimination is harmful since it affects the economic outcomes of equally productive workers. According to Blau [13], even after controlling for experience and qualifications 'there tends to be a pay difference between men and women that is not explained and is potentially due discrimination'. At the core of workplace inequity is the repudiation of generalisations to judge individuals; for example, it is not uncommon to discriminate against women on the basis of a generalisation about the sexes [14]. Even if it is true on average that men are stronger than women, some women are stronger than some men. In hiring workers to perform a job requiring strength, it would be inequitable to exclude all women. Instead, a fair assessment of individual abilities will reveal which women and men have the ability to perform the job adequately.

Exclusionary behaviours may take many forms, and the unlawful rejection of job applicant during a pre-employment medical examination based on gender is one of these forms. Age discrimination is also recognised as a serious problem in the work place by many authors, as highlighted by Neumark [15]. 'This discrimination was more likely reflective of negative stereotypes about older workers than simply distaste towards older workers that affected hiring.' 'Results support the initial hypotheses and suggest gender to be one variable worthy of study by future researchers investigating the outcomes associated with workplace exclusion' [16].

'Some kinds of screening tests disproportionately exclude members of certain groups' [14]. For example written questionnaires may

disadvantage individuals whose native language is different. There are many possible discriminatory actions that employer can perform. One of the possible discriminatory actions is the exclusion from a job during the pre-employment examination. To scrutinise how an oil and gas company hires new workers and whether women and older age groups are excluded form job opportunities is the topic of this study. The recruitment process is an area in which discrimination is common and difficult to detect. Labour market discrimination exists during the hiring stage or after in the workplace, however. 'Age discrimination is most common in the recruitment and selection stage '[17].

For job applicants, exclusion from employment may happen in one of two stages, either the job interview or the pre-employment medical examination. This study investigates the latter scenario. The pre-employment medical examination is a mandatory stage in the employment course in many oil and gas companies in the GCC region. The examination includes many medical investigations and blood tests. Although the fitness outcome is related to the results of these tests, the final decision is made by the occupational health (OH) doctors based on their judgment. The primary goal of the project is to investigate whether the gender and age of the recruit has an impact on the pre-employment medical outcome, the likelihood of hiring and access to jobs.

This study is also important because it will help inform a company's decision makers about their employment process the potential of discrimination occurrence. In addition, the study is also vital for occupational health practitioners. According to the International Code of Ethics for Occupational Health Professionals published by the International Commission on Occupational Health (ICOH) [19], Occupational health professionals (OHP) should assist workers in obtaining and maintaining their jobs with due concern to protection of health in relation to work and without leaving any possibility for discrimination. All workers should be treated in an equitable manner, without any form of discrimination and OHPs must 'build a relationship of trust, confidence and equity with the people to whom they provide occupational health services.'[19].

OHP have to work to attenuate, as much as possible, discriminations based on age, gender, illness or handicap. A systematic review of evidence might not be the appropriate way to answer this study question. There are considerable differences between the cultural and legal backgrounds of the GCC region and the western countries in which the majority of studies are conducted. Therefore, a systematic review and meta-analysis of evidence will not answer the study question. No similar studies have been conducted in Qatar or in the GCC region.

Oil and gas is the major industry in the GCC region, and these countries share a similar culture and legal framework with a high rate of expatriate workers. Therefore, there is a need to study the pre-employment process in this context rather than rely on a systematic review of available evidence. It is important that a company have non-discriminatory pre-employment medical tests that are clearly relevant to the specific requirements of the job. Employers could be liable for discrimination if they misuse pre-employment medical tests. This study can help a company ensure that there is no discrimination against women or older recruits during the pre-employment medical process. 'Recruitment and retention was seen as a key area for the implementation of good practice' [17].

AIMS AND OBJECTIVES

Aim

- To investigate pre-employment medical assessment in the Qatar oil and gas industry.

Objectives

1. To describe the social and demographic characteristics of the job applicants and summarise the previously collected data of the prospective employees of the company.
2. To examine the relationship between the pre-employment assessment results and the gender of the employee.
3. To examine the relationship between the pre-employment assessment results and the age of the employee.

METHODS

The study design for this MSc project is cross-sectional using secondary data. A total of 2462 individuals aged from 20–55 years from different ethnicities (1872 male and 590 female). The setting is the pre-employment medical checkup at Qatar petroleum medical centre in Doha, Qatar. The observational design is used to test the study hypothesis that women and older job applicants are at higher risk of exclusion from employment during the pre-employment medical examination.

Background information on the dataset: The study is based on existing data. Permission was granted by the occupational health centre, which owns the data. The data were provided in an MS Excel format.
The study dataset was drawn from the database of pre-employment medical function.

It consisted of data on job candidates who finalised their pre-employment medical examination in the period from January 1, 2012 to December 31, 2012. The study included 2462 individuals aged from 20–55 years from different ethnicities, with 24% females. The reason why data from 2012 are used is that the proposal was submitted in 2013; at that time, the only annual report available was that from 2012. The company

produces the data report on an annual basis, and it is more convenient to request a data set for one year. The data set contains only job applicants who passed the job interview and completed the full pre-employment medical examination. People who withdraw from the employment process in any stage before completion are not included in the database.

Dataset variables

- Demographics: Age (years), Gender, Educational level.
- Work category: Position level and Work type.
- Smoking status: smoker, non-smoker.
- Weight (kg) and height (cm): Height and weight are used to calculate the body mass index (BMI), which is used as indicator of obesity. BMI is calculated using the following formula: BMI = Weight (kg) / (Height (m) x Height (m)).
- Outcomes from pre-employment assessments range from "fit" to "unfit."

All data are categorical data, except the weight and height.

Exclusion criteria:

- Pre-employment health records with age or gender; records with 3 confounding variables missing.

Organising data: the data were in an Excel table before being imported to STATA 11 for analysis; the data were coded as follows:

• Gender: male=1 female =2

• Age: 20–29 =1, 30–39=2, 40–49=3, 50–59=4

• Work type:

1. Light work: office based= 1
2. Medium work: mix of indoor and outdoor= 2
3. Heavy work: operation=3

• Position levels: employee level=1 and senior staff level=2

• Smoking status: smoker=1 or non-smoker= 2.

• Diabetes mellitus (DM), Yes = 1, No = 2.

• Education: High school, Associate degree, Bachelor's degree, and Master's degree or higher coded as 1, 2, 3, and 4, respectively.

• Examination outcome: fit or unfit, 1 or 2, respectively.

• A math function was added to the Excel sheet to calculate the BMI for each individual.

A data cleaning process is implemented to edit outliers and missing data. The data are of good quality, and only a few missing data points were detected. Missing data were found in only the following 3 variables: diabetes (6 values), smoking (7 values), and BMI (9 values). The missing data are random and do not follow skip patterns. The Excel filter function is used to look for the outliers and missing data. List wise deletion is used to handle the missing data by deleting any case that has missing data for the variable of interest because the missing data comprise less than 5% of the full sample.

DATA ANALYSIS

All statistical analyses were performed using Stata 11 (Stata Corp, College Station, USA). We first described the baseline socio-demographics of the study population, and then we tested the association between the outcome and exposure;

- Unadjusted odds ratios (OR) and their 95% CIs are derived to assess association.
- Chi square is used to test the significance of the difference between categorical data.
- P values less than 0.05 are accepted to indicate statistically significant differences.
- The exposure variables are as follows: gender and age groups. The outcome of interest is fitness status, (the results of the pre-employment medical examination) the work candidate can be either fit or unfit to work, and the outcome of fit with restrictions is considered as fit to work. The potential confounders (covariates) are educational level, BMI, diabetes and smoking status.

The existing data are provided in the Microsoft Office Excel 2007 format. Frequency distributions and chi-square statistics are used for categorical variables. Logistic regression analyses are performed to assess the independent effect of age, gender, education level, BMI, smoking status and job type. The 95% confidence interval is calculated using the standard error of the regression coefficient.

RESULTS

Study group characteristics

- 2462 individuals (1872 male and 590 female)
- Nearly three-fourths (76%) of the subjects are men and 24% are women.
- The mean (standard deviation) age of participants was 36.35(8.89) years.
- The largest age group is the 30- to 39-year-old group (42.1%). The smallest age group is the 50- to 59-year-old group (10.2%).
- The majority of the candidates (62.0%) are at the employee level, and only 38% are at the senior level, there are more men than women applying to senior level jobs, 40.2% and 32% respectively.
- More than half of the employees (50.5%) perform heavy labour. 35% of men and 49.8% of women apply for light work (office based).
- The study population has a relatively high education level. More than half of the job applicants (52.2%) have a Bachelor's Degree, and 14 % completed only high school.
- The majority of the subjects (86.9%) are non-smokers, and fewer women smoke than men (11.6% vs 13.6%).

- 8.6% of the subjects are diabetics. Diabetes was more prevalent in men (9 %) than women (7.6 %).
- The largest BMI category is overweight (37.9%). The smallest BMI category is underweight (2.9%). Further, 32.9% of the subjects have a normal BMI, and 26.3% of the subjects are obese. Obesity was more prevalent in women (28.6%) than men (24.9%).

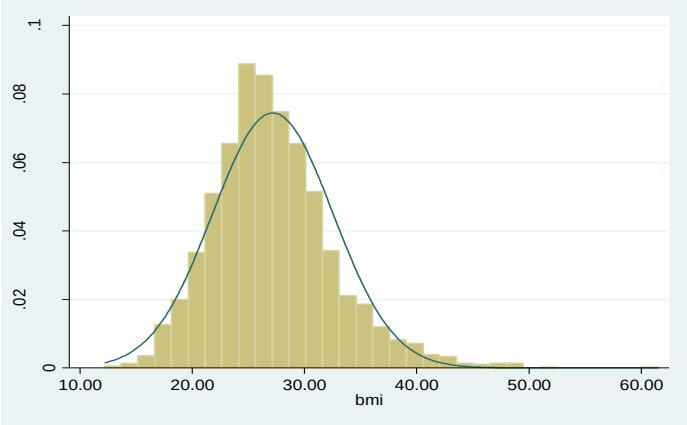

Fig 1: BMI distribution of the study group

The BMI of the job applicants in the study group was normally distributed (Fig 1)

Table 1 shows the characteristics of the study group. Records with missing data were excluded from the analysis. All variables had fewer than 5% of records with missing data. The sample size was thus 2440 records, after excluding the missing data. Fitness status (outcome): table 2 shows the fitness status of the group as stated by the OP of the company. The majority of the subjects (96.2%) are fit, and only 3.8% were declared unfit to take the post. The latter candidates lost the opportunity.

Table 1: Characteristics of the study group

Characteristic		**All Subjects** (N=2,440)	**Men** (n=1,852, 76%)	**Women** (n=588, 24%)
Age (years)	Mean(SD)	36.35 (8.89)	36.5 (8.81)	35.94 (9.13)
Position	Employees	1,508(61.8%)	1,108 (59.8%)	400(68%)
	Senior staff	932 (38.2%)	744 (40.2%)	188(32%)
Work type	Light work	941 (38.6%)	648 (35%)	293 (49.8%)
	Medium work	270 (11.0%)	210 (11.3%)	60(10.2%)
	Heavy work	1229 (50.4%)	994 (53.7%)	235(39.9%)
Education level	High school	342 (14.0%)	252 (13.6%)	90(15.3%)
	Associate degree	519 (21.3%)	397 (21.4%)	122(20.7%)
	Bachelor's degree	1,277 (52.3%)	976 (52.9%)	301(51.2%)
	Master's degree	302 (12.4%)	227 (12.2%)	75(12.7%)
Smoking	No	2,120 (86.9%)	1,600 (86.4%)	520 (88.4%)
	Yes	320 (13.1%)	252 (13.6%)	68(11.6%)
Diabetes mellitus	No	2,229 (91.4%)	1,686(91%)	543(92.3%)
	Yes	211 (8.6%)	166 (9%)	45(7.6%)
Body Mass Index (BMI) (Kg/m2)	<18.5	72 (3.0%)	57(3%)	15(2.5%)
	18.5-24.9	815 – (33.4%)	603(32.6%)	212(36%)
	25-29.9	923 – (37.8%)	732(39.5%)	191(32.4%)
	>30	630 – (25.8%)	462(24.9%)	168(28.6%)

There are slightly more men rendered unfit to work than women (3.8% vs 3.7%). If the outcome is unfit, this means that the job candidate has a medical condition that prevents him/her from doing the job and he/she will lose the job opportunity. If the candidate is declared medically fit, there are no medical restrictions to performing their job.

Table 2: The fitness to work status of the study group

Fitness Status				
	Frequency	**Percent**	**Men**	**Women**
Fit	2,347	96.2	1,781(96.2%)	566(96.3%)
Unfit	93	3.8	71 (3.8%)	22 (3.7%)
Total	2,440	100.0	1,852	588

Test of association

Table 3 shows the results from a crude analysis of the association between outcome (fitness status of the pre-employment medical examination) by gender and age groups as well as the possible confounders (covariates) using Chi-square test of association. The results show that only 3.8% of males are unfit and that 3.7% of females are unfit. The p-value of the Chi Square Test = 0.889 > 0.05. This result means that the relationship between gender and fitness status is statically not significant. The odds ratio = 1.035, which means that females are 1.035 times more likely to be fit than are males. The 95% confidence interval = (0.636, 1.684). The confidence interval crosses the value 1. Which also indicates that the association between gender and fitness status is not significant?

Table 3: Unadjusted odds ratio (OR) with 95% confidence interval (CI) for fitness status in relation to gender and age as well as covariates

Variable	**Categories**	**Total**	**Prevalence of unfit to work cases N (%)**	**OR (95% CI)***	**p-value****
Gender	Male	1852	71 (3.83)	1	C= 0.01
	Female	588	22 (3.74)	0.98 (0.60-1.59)	P= 0.919
Age	20-29	551	16 (2.90)	1	C= 14.95
	30-39	1035	28 (2.71)	0.93 (0.50-1.73)	P= 0.002
	40-49	606	38 (6.27)	2.24(1.23-4.07)	
	50-59	248	11 (4.44)	1.55 (0.71-3.40)	
Position	Employees	1508	57 (3.78)	1	C= 0.01
	Senior staff	932	36 (3.86)	1.02 (0.67-1.57)	P= 0.917
Work type	Light work	941	37 (3.93)	1	C= 1.11
	Medium work	270	13 (4.81)	1.24 (0.65-2.36)	P= 0.575
	Heavy work	1229	43 (3.50)	0.89 (0.57-1.39)	
Education level	High school	342	16 (4.68)	1	C= 0.97
	Associate degree	519	20 (3.85)	0.82 (0.42-1.60)	P= 0.809
	Bachelor's degree	1277	47 (3.68)	0.78 (0.44-1.39)	
	Master's degree	302	10 (3.31)	0.70 (0.31-1.56)	
Smoking	No	2120	76 (3.58)	1	C= 2.26
	Yes	320	17 (5.31)	1.51 (0.88-2.59)	P= 0.132
Diabetes mellitus	No	2229	85 (3.81)	1	C= 0.00
	Yes	211	8 (3.79)	0.99 (0.47-2.08)	P= 0.987
Body Mass Index (BMI)	<18.5	72	3 (4.17)	1	C= 3.32
	18.5-24.9	815	23 (2.82)	0.67 (0.20-2.28)	P= 0.345
	25-29.9	923	39 (4.23)	1.01 (0.31-3.37)	
	≥30	630	28 (4.44)	1.07 (0.32-3.61)	

* Unadjusted odds ratio

** Chi sq test (C) and p-values (P)

Association with age groups

2.9% of the subjects aged 20-29, 2.7% of those aged 30-39, 6.3% of those aged 40-49 and 4.4% of those aged 50-59 are unfit to work. The odd ratio of potential employees aged 30-39 to those aged 20-29 is 1.064. This means that subjects between 30 and 39 are 1.064 times more likely to be fit than subjects between 20 and 29. The 95% Confidence Interval = (0.571, 1.984), which means that the association between the variables is not significant.

The odds ratio of potential employees aged 40-49 to those aged 20-29 is 0.436. This means that the likelihood of subjects between 40 and 49 years of age to be fit is 0.436 times that of subjects between 20 and 29 years of age. The 95% confidence interval = (0.241, 0.789), which means that the odds of being fit are significantly lower for subjects between 40-49 compared to subjects between 20 and 29. These data suggest a significant relationship between age and fitness status.

The odd ratio of age 50-59 to 20-29 is 0.647. This means that the likelihood that subjects between 50 and 59 years of age are fit is 0.647 times that of subjects between 20 and 29 years of age. The 95% confidence interval = (0.296, 1.414), which means that the relationship between the variables is not significant. The rate of unfit status does not increase by age and only one age group (40-49) has statistically significant higher rate of unfit in comparison with the first age group (20-290). Figure 2 shows that there is no linear trend for higher levels of unfit status with increased age.

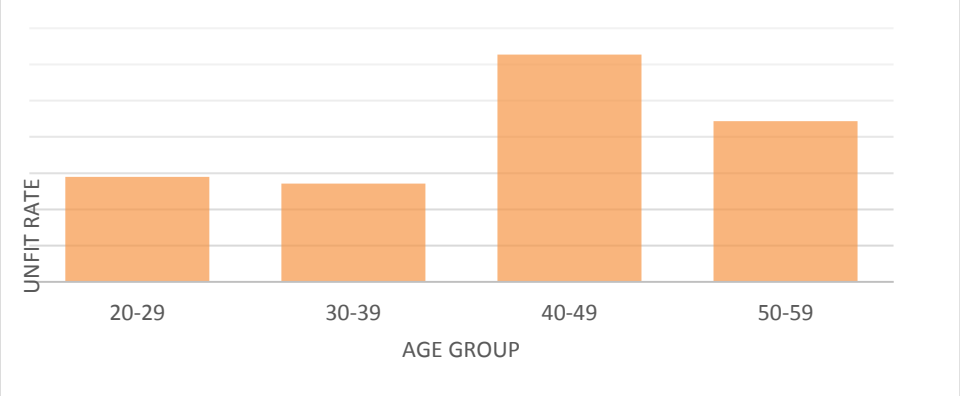

Fig 2: Prevalence of unfit status by age groups

Possible confounders (covariates)

The data set contains 2 main variables, age and gender, and 6 covariates, educational level, BMI recoded, DM, smoking, position level, and work type. The association results are adjusted to these variables as possible confounders. There are other possible confounders that were not available to the investigator, such as income and ethnicity. Table 4 shows odds ratios for the association between fitness status and gender and age adjusted for possible confounders (educational level, BMI, DM, smoking, position level, and work type). The odds ratio for female to male = 0.977, meaning that controlling for other factors, the likelihood that females are fit is 0.977 times that of males. The 95% Confidence Interval = (0.592, 1.612), which means that the association between gender and fitness status is not significant.

The odd ratio for potential employees aged 30-39 to those aged 20-29 = 0.952, indicating that controlling for other factors, the likelihood of those between 30 and 39 years of age to be fit is 0.952 times that of those between 20 and 29 years of age. The 95% confidence interval = (0.497, 1.821), meaning that the association between the variables is not significant. The odd ratio for employees aged 40-49 to those aged 20-29 = 0.415. This means that controlling for other factors, the likelihood of those aged 40-49 to be fit is 0.415 times that of those aged 20-29. The 95% confidence interval = (0.220, 0.784), meaning that the odds of being fit are significantly lower for the subjects aged 40-49 compared with the subjects aged 20-29. That is, there is a significant relationship between age and fitness status (outcome).

The odds ratio for employees aged 50-59 to those aged 20-29 = 0.558. This means that controlling for other factors, the likelihood for those aged 50-59 to be fit is 0.558 times that of those aged 20-29. The 95% Confidence Interval = (0.245, 1.275), meaning that the relationship between the variables is not significant. Even after control to confounder, the rate of unfit status does not increase by age, only one age group (40-49) has statistically significant higher rate of unfit in comparison with the first age group (20-290). In addition, there is no linear trend for higher levels of unfit status with increased age.

Table 4: Odds Ratios (95% CI) for the association between fitness status and gender and age adjusted for possible confounders (logistic regression output with independent variables)

Variable	Categories	Total	Prevalence of unfit cases N (%)	Adjusted OR (95% CI)	p-value
Gender	Male	1871	3.8%	1	0.889
	Female	591	3.7%	0.977(0.592,1.612)	
Age	20-29	558	2.9%	1	0.001
	30-39	1037	2.7%	0.952(0.497,1.821)	
	40-49	615	6.3%	0.415(0.220,0.784)	
	50-59	252	4.4%	0.558(0.245,1.275)	

DISCUSSION

This study has produced no evidence to support the hypothesis that women and older work candidates are at a higher risk of exclusion from employment during the pre-employment medical examination. The data are not sufficient to reject the null hypothesis. These results do not exclude any discrimination that might occur during the job interview or after joining the workplace. There were generally no statistically significant associations between the outcome (fitness status) and gender, age or any of the possible confounders.

Even after adjustment for possible confounders, associations between gender and the outcome remained non-significant. In addition, there was no trend to indicate that older individuals were excluded from employment during the pre-employment evaluation. These results suggest that occupational health professionals who are in charge of the pre-employment examination do not exclude candidates illegitimately because of their gender or age. No similar studies have been conducted in Qatar or in the region; however, these results are consistent with the general observations that oil and gas companies are preferred employers that have solid policies and practices on workers' rights. In 2012, two oil and gas companies were chosen as Employers of Choice for Women (EOCFW) in Australia [20].

McKee [21] has observed changes in women hiring in the US energy industry; 'Recent hiring trends seem to demonstrate that the energy industry, an unlikely suspect, is beginning to provide women with opportunities for mid-level and higher-level work with security, benefits and room for advancement' [21]. In the GCC countries, 'construction workers and domestic laborers experience serious health and safety problems resulting from inhumane work and living conditions' [22] and according to the Human Rights Watch report in 2010 [23] 'In many host countries, the combination of significant gaps in labor laws, visa systems that give employers immense control over workers.' 'Several major construction firms are known to have an unwritten policy of not hiring workers who refuse to give up their passports, and in some documented cases even make money by charging fees to return passports' [22]. On the other hand, the government and national energy companies have better records in workers' rights and are preferred employers.

Female labour force participation is lowest in the Middle East and North Africa (26 percent) and South Asia (35 percent) [24]. In this study population, 24% of the potential employees were female. In comparison, in the U.S. Oil & Gas industry, women accounted for 15 to 25 percent of workers [25]. Employment discrimination in hiring is any discriminating practice that biases the selection and recruitment of employees. In many countries, there are regulations and laws that prohibit and control employment discrimination. The Disability Discrimination Act of 1995 (DDA) [26] and the Equality Act of 2010 (EA) [27] in the UK and The Americans with Disabilities Act (ADA) [28] in the USA are examples of these regulations. All of these regulations have specific provisions that protect job applicants from unfair treatment. In the US, the ADA prohibits discrimination based on disability, which makes discrimination based on race, sex, age, and other characteristics illegal [28]. The EA 2010 offers protection to individuals with "protected characteristics," such as disability, age, pregnancy and maternity [27].

According to this law, it is unfair for an employer to dismiss an employee for a reason related to these characteristics. Section 18 of the act protects against pregnancy and maternity work discrimination. Additionally [27] Section 60 specifies that pre-employment health screening (PEHS) assessments before a job offer may contravene the act [27]. The Equality Act 2010 'limits the circumstances when you can ask health-related questions before you have offered the individual a job' [29]. These regulations make it difficult for employers to discriminate against women or older people during the hiring process. A similar legal framework is not available in Qatar.

The Qatar Labour Law of the Year 2004(30) offers a body of laws outlining legal rights, restrictions and obligations of employees and employers. However, it does not provide specific protection to job applicants during the pre-employment stage. In addition, it does not cover government employees [30].

The Qatar law No. 2 of 2004 [31] in respect of people with special needs provides protection and rights to disabled individuals; however, unlike the EA 2010 law, the Qatari law does not explicitly mention protection for pregnant women, nor does it provide details of disability definitions and adopt narrower definitions [31]. These omissions make it easy for employers to develop and implement extended pre-employment medical screenings that serve their needs and may discriminate against some vulnerable groups. This is why studying this topic is crucial to monitoring and investigating the pre-employment medical evaluations and hiring process in general.

The results showed that regardless of whether we adjusted for the confounding influence of age, gender, and neither smoking status, neither grade 2 nor grade 3 obesity was significantly associated with the odds of the pre-employment medical outcome. This is the first study of this type in Qatar; therefore, further studies are needed to investigate this association. Additionally, more studies are required for better understanding of other vulnerable groups, such as job candidate with special needs and ethnic groups, also to investigate other stages of the hiring process.

CONCLUSIONS

In summary, there were generally no significant associations between the outcomes of the pre-employment medical examination and the gender or age of the job applicants. These results suggest that occupational health professionals who are in charge of the pre-employment examination do not exclude candidates from job offers because of their gender or age. Before we can draw concrete conclusions, more variables should be evaluated. Regular monitoring and auditing of the hiring process is recommended to ensure diversity in recruitment and to ensure that activities comply with existing policies and best practices.

Financial support and sponsorship- Nil

Conflicts of interest- There are no conflicts of interest.

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