Estimating Relationship between Type of Disability and Labor Force Participation: A Community Based Study in Iran

Engellilik Türü ve İşgücüne Katılım Arasındaki İlişkinin Tahmini: İran'da Topluma Dayalı Bir Çalışma

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ABSTRACT

In this study we tried to find what type of disability has more effect on labor force participation. A 1500 community based data of disabled people in ten provinces of Iran was used in this study. Logistic model was used to show the effects of disability type on labor force participation. Sex, age, marriage status, education, usual living ability and communication ability were adjusted in the model. The results of this study showed that people with mental disability and hereditary disability went less to work in comparison with others. Because of the financial concerns of disabled people, policy makers must find solutions to help disabled people to go more to work.

Key Words: Disability type, labor force participation, logistic model, Iran

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ÖZET

Bu çalışmada, engelliliğin hangi tipinin işgücüne katılım üzerinde daha fazla etkili olduğunu bulmaya çalıştık. Bu çalışmada İran'ın on ilindeki özürlü bireylerden oluşan 1500 kişilik bir toplum verisi kullanılmıştır. Engellilik türünün işgücüne katılım üzerindeki etkilerini göstermek için lojistik model kullanılmıştır. Modelde cinsiyet, yaş, evlilik durumu, eğitim, normal yaşama gücü ve iletişim yeteneği ayarlandı. Bu çalışmanın sonuçları zihinsel engelli ve kalıtıma bağlı olarak engelli olan kişilerin diğerlerine kıyasla daha az çalıştıklarını ortaya koydu. Özürlülerin maddi kaygıları nedeniyle, politikacılar özürlülere yardım etmek için çözümler bulmalıdır.

Anahtar Sözcükler: Engellilik türü, işgücü katılımı, lojistik model, İran

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INTRODUCTION

Disability is a condition in which people have limitation in physical, mental and emotional factors and these limitations affect their usual standard in live (1). World health organization has updated International Classification of Disability, Functioning, and Health (ICF), on May 2001, and classified in to 9 dimensions contain disability in vision, hearing, learning, thinking, movement, remembering, mental health, social relationship and communicating(2). Disabled people are such people who cannot work easily and need help(3). Ability of disabled population for working depends on the severity of disability and classification of it(4). In addition it depends on the type of work too. For example, the prevalence of working in people with hearing disability is higher than vision disability(5). Estimation of data in the United States has confirmed that near 8.1% of age 18-64 Americans have at least one type of work limitation(6). Prevalence of disability in Iran is higher and near 11% of Iranians have one type of disability from very low types to severity ones(7). From the view of employees, having competent labor force is very important. Employ of disabled labor force may decrease efficiency of production and may decrease the organization's profit. In most cases, disabled persons must spend lots of money for having a standard living but because of the catastrophic expenditures, they need to earn money. But because of not being employed, they cannot go to work and they need to be helped by donor organizations(8). Rehabilitation settings can help disabled persons to decrease the side effects of their disabilities and for example can help them to go to work(9). Categorizing disabilities by their effect on employment might be an important issue for work force policy makers in each country. In this way, finding the effects of each type of disability on labor force participation can help policy makers. In this study we try to find, which type of disability has more effect on the participation of disabled people on labor market.

MATERIALS and METHODS

Data

In this cross sectional study, data of community rehabilitation records of tenIran provinces (Zanjan, Khorasane-Shomali, Guilan, Fars, Markazi, Chaharmahalvabakhtiari, Kahkiloyevaboirahmad, Ghazvin, Esfahan and Khorasanejonubi) were used. Because of using previously used data, no sample size selection was conducted in this study. In this study, disability categorized to 8 types: genetic diseases, hereditary diseases, congenital diseases, non-communicable and communicable diseases, disasters, mental illness and other diseases. In addition, amount of usual living ability and communication ability was calculated in this study. These two variables were calculated using Tizun-Zhao questionnaire and principal component analysis (PCA) method was used for calculating scores of them. This questionnaire contained nine scales contain daily living abilities, social communication, working abilities, quality of life, source of income, employment status, participation in social livings and education status(10). Higher scores meant that each disabled person has less difficulty in his/her usual living and communication ability. We used these two variables as adjusted ones to show that what type of disability with similar usual and communicational ability has more effect on labor force participation.

Model and analysis

An econometrics model was used for estimation the effects of disability dimensions on labor force participation. In this study, participation of people contains both working in paid, unpaid and family works. Logit estimator was used for estimating the model. Dependent variable of this model was individual level of labor force participation (0= not working, 1= working) and explanatory variables were type of disabilities. Some control variables were added in the model too. These control variables contained age, sex, level of education and amount of usual living and communication ability. These variables were adjusted in the model. Logit form of the model is shown below:

$$\ln\left(\frac{p(prog = work)}{p(prog = not\ worked)}\right) = \beta_0 + \beta_1(sex) + \beta_2(edu) + \beta_3(age) + \beta_4(marr) + \beta_5(uf) + \beta_6(cum) + \beta_7(disability) + u_i$$

Where: Sex is the sex of each person, which has two values (1= male, 0= female), Edu is the level of education of each person and has four values: (1=illiterate, 2= primary 3= secondary school, 4= high school, 5= academic studies), Age is the age of each person, Marr is marriage status and contain four values: (1=married, 2= single, 3= divorced, 4= others), Uf is amount of usual living ability of each person. The higher score of usual living ability shows that the person has lower disability in writing, eating, washing, etc. Cum is the ability of person to communicate with others. For example speaking, lip reading, hearing, etc. Disability is the type of disability of each person and contains 8 values: genetic diseases, hereditary diseases, congenital diseases, non-communicable and communicable diseases, disasters, mental illness and other diseases.

The results of the model and the effect sizes were reported as odds ratios. P-values and confidence intervals of each variable was reported and after estimating the model, pseudo R2 test and log likelihood was reported for showing goodness of fit in the models. Furthermore, Roc curve was calculated for this model too.

RESULTS

Mean age of the sample was 30.483 (±14.206). Other descriptive statistics of this study are shown in the table one.939 (62.6%) of disabled population were male, 592 (39.49%) were illiterate, 433(28.88%) population had primary school, 189 (12.6%) ones had secondary school, 268(17.87%) had high school and others (1.13%) had academic education. In addition, 438 disabled people worked and it meant that labor force participation rate of disabled people was 29.2%.

Table 1: Descriptive statistics

Variable	Number	Percentage	Variable	Number	Percentage
Sex- male	939	%62.6	Married	528	%35.2
Education- illiterate	592	%39.49	Single	938	%62.5
Education- primary	433	%28.885	Divorced	23	%1.5
Education- secondary	189	%12.60	Others	11	%0.07
Education-high	268	%17.87	Working	438	%29.2
Education-academic	17	%1.13	Not working	1061	%70.73

In the table two, results of estimating labor force participation model is shown. In the first row, the name of each variable, in the second row Odds ratio of them, at the third, 4th, 5th and 6th row, standard errors, p-values and lower and upper limit confidence intervals were placed.

After adjusting the effects of age, sex, usual life ability, communicational ability, marriage status and education, we found the relationship between the type of disability and participation in labor market. Between types of disability, hereditary and mental disabilities had significant relationship with labor force participation in 95% level. Congenital, non-communicable and disaster disabilities had relationship with labor force participation in 90% level. No significant relationship was found for other types of disability. Odds ratio for all types of disability was less than one and it meant that the relationship between type of disability and labor force participation is negative.

Between disabilities, the negative relationship for mental disability was higher than others and after that hereditary disability had highest relationship.

For control variables, age had positive relationship with labor force participation; gender (being female) did not have significant relationship with labor force participation. Education level had positive relationship with labor force participation and the relationship was higher by increase in the level of education. Marriage had not significant relationship with labor force participation. In addition, usual life ability score and communication score had not any significant relationships with labor force participation. ROC curve was calculated to show predictive ability of the model. The area under ROC curve was 0.6601.

Table 2: The results of labor force participation model for disabled people

Variable	Effect size	Standard error	P-value	Lower limit CI	Upper limit CI
Disability type Base-genetic	-	-	-	-	-
hereditary disability	0.61294**	0.14726	0.042	0.3827	0.9815
Congenital disability	0.71172*	0.12516	0.053	0.5042	1.0046
Non-communicable	0.60308*	0.16704	0.068	0.3504	1.0378
communicable	0.89829	0.47329	0.839	0.3198	2.5228
Disasters	0.62399*	0.16457	0.074	0.3721	1.0463
mental disability	0.45981**	0.15573	0.022	0.2367	0.8930
other diseases	0.66045	0.16768	0.102	0.4015	1.0863
Age	1.0228**	0.00512	0.000	1.0128	1.0329
Gender-female	0.89051	0.11188	0.356	0.6961	1.1391
Education Illiterate-base	-	-	-	-	-
Primary school	2.0111**	0.31876	0.000	1.4740	2.7437
Secondary school	2.5020**	0.50427	0.000	1.6855	3.7140
High school	2.5238**	0.46558	0.000	1.7580	3.6231
Academic education	31.911**	24.5498	0.000	7.0646	144.1412
Marriage status: Married-base	-	-	-	-	-
Single	0.75984*	0.10938	0.056	0.5730	1.0075
Divorced	0.81505	0.38856	0.668	0.3201	2.0748
Widow	1.2643	0.83129	0.721	0.3485	4.5869
usual life score	0.97134	0.03064	0.357	0.9130	1.0333
Communication score	1.0108	0.03923	0.782	0.9367	1.0907
Constant variable	0.2305**	0.07582	0.000	0.1210	0.4392

** significant in 95 % CI, * significant in 90 % CI

DISCUSSION

The results of this study showed that mental disability has the highest relationship with labor force participation. By increase in the number of mental disabled persons, participation in labor market has been decreased. In addition, relationship was found for hereditary disability. However the relationship between hereditary disability and labor force participation was not as strong as mental disability. Other types of disabilities had not significant relationship with labor force participation in 95%. Banerjee et al in a study done in 2015 found inverse relationship between mental disorders and labor force participation (11). Banerjee in another study in 2014 found that major depressive episode, indecisiveness, insomnia and hypersomnia and fatigue have negative effect on hours of work and labor force participation (8). Chatterji et al in 2007 found similar relationships between psychiatric disorders and employment, the weeks of working in a year (12). Callander et al. in Australia after adjustment of sex, age, education, income and severity of disability found that people who were in labor force, liked to be more in community than other disabled people(13). Schofield et al in another study in Australia found that depression and mental health disorders and nervous system diseases had more effect on exit from labor force in 2008(5). Furthermore, Schofield et al in 2012 found that multiple comorbidities have more effect on labor force participation than other disabilities(14). Lindsay et al studied disabled young adults and teens barriers for entrance to labor market. They found that severity of disability and type of disability and other socio-demographic factors affect labor force participation (15). Lindsay in another study found that geographic distance is one of the most barriers of people with mobility disability and they found that by increase of the age of disabled people from 15 to 24 years old, the likelihood of entrance to labor market would increase(16). Xinag et al found that immigrants with disability go to labor market more other disabled Americans (3).

Disability has two side effects to move disabled people in to financial concerns. First, disabled people may need several materials, rehabilitations, etc to be alive(16). They may need to spend lots of money for life. Second, many disabled people cannot go to work, so they may not earn money and may not be able to cover the costs of rehabilitation setting. So if policy makers find some arrangements help them to work, some parts of their financial concerns may be decreased (4). In this study we found the types of disabilities which had more effect on labor force participation. It is important to discuss that people with other types of disability which had not high relationship with labor force participation are good cases for rehabilitation setting and enforcement for labor market (5, 9). However preparing disabled people for labor market depends on the severity of their illness but it could be indicated that in disabilities with similar severity, helping mental and hereditary disability persons for going to work is harder than other types (17-19). So for enforcement of disabled people for going to work, it is important to notice to the type of disability.

This study had some limitations. First the cross sectional nature of it do not allow us to test the effects of each type of disability on labor force participation and we used the relationship between these two variables instead. Second, some other potential confounding variables like income must be adjusted in this study, but because of not having enough information, we were not be able to add these variables to control the effects of them.

CONCLUSION

After adjusting the effects of severity of disability and sociodemographic factors, it could be indicated that type of disability affect participation of disabled people in labor market. Mental and hereditary disability was the most effective types of disabilities on labor force participation. For future studies it is suggested to add the effects of wealth or income as confounding variable in labor force participation model.

Conflict of interest

No conflict of interest was declared by the authors.

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