FACTORS IMPACTING THE SEEKING OF TREATMENT FOR MENTAL ILLNESS BY EMPLOYEES

Introduction:

What can organizations do to promote behaviors that lead their employees to seek treatment for their mental illness? This paper explores the factors that impact the employee's intention-behavior to seek treatment for mental illness to guide organization on the factors they can prioritize to empower their employees better. Mental illness has wide-reaching effects on an employee's performance and their behavior at work. Therefore organizations must help employees with this aspect. The social stigma associated with the psychiatric disorder is a significant barrier to seeking help and therefore an organization's participation in this is important to cultivate healthy behaviors in this regard.

There is a wide spectrum of afflictions that are classified as a mental illness. In fact, nearly half (44 percent) of working adults say that their current job affects their overall health, but only 28 percent of those believe that effect is a good one (Chan, 2016). People with mental illness, in dangerous or low-paying jobs, and those in retail are most likely to say their job has a negative impact on their stress levels (43 percent), eating habits (28 percent), sleeping patterns (27 percent) and weight (22 percent) according to Chan (2016). The problem is significant. This paper investigates this problem with a view to providing recommendations to organizations as a way to mitigate some of the issues regarding seeking help to alleviate employee problems.

Many firms have viewed their responsibility to employee health and well-being at arm's length, as an act of largesse that often begins and ends with perquisites like medical insurance, a few paid sick days, or maybe discounts on gym memberships. But data shows that 36 percent of workers suffer from work-related stress that costs U.S. businesses $30 billion a year in lost workdays. Experts say many of these health problems can be corrected if companies adopt a much more significant role creating a "culture of health" in the workplace where workers feel empowered to pursue living a healthier life, not just providing access to after-work yoga classes or fruit in the break room.

Data:

This paper uses survey data of employees in technology organizations. The data is available at the Kaggle Website (Kaggle (2014)). The survey measures attitudes towards mental health and frequency of mental health disorders in the tech workplace. Since these are technology organizations, we assume that all other things regarding employees are similar. This restrictiveness in data may be a limitation of the data set, and a future research has to address this.

We have identified Intent to seek treatment as the dependent variable. The variable is binary. The data is analyzed using a logistic regression model.

Problem:

The selection of the independent variables was based on conversations with experts. The guiding theory for the selection is the rational choice theory where actors behave in ways that maximize their benefits. The variables selected for the model include Care_Options, Wellness Program, etc. as elaborated in Table 1. The framework is adapted by certain variables such as Family history that are not part of the rational choice theory.

Table 1: Variable Definitions and their code

Variable Name	Description	Code
Treatment	Have you sought treatment for a mental health condition?	Yes = 1, No = 0
Age	Age of the person	NA
Male	Gender of the person(Male or Female)	Male = 1, Female = 0
Family_History	Do you have a family history of mental illness?	Yes = 1, No = 0
Remote_Work	Do you work remotely (outside of an office) at least 50% of the time?	Yes = 1, No = 0
Benefits	Does your employer provide mental health Benefits?	Yes = 1, No = 0
Care_Options	Do you know the options for mental health care your employer provides?	Yes = 1, No = 0
Wellness_Programs	Has your employer ever discussed mental health as part of an employee wellness program?	Yes = 1, No = 0
Seek_Help	Does your employer provide resources to learn more about mental health issues and how to seek help?	Yes = 1, No = 0
Anonymity	Is your anonymity protected if you choose to take advantage of mental health or substance abuse treatment resources?	Yes = 1, No = 0
Leave	How easy is it for you to take medical leave for a mental health condition?	Very easy = 5, Somewhat easy = 4, don't know = 3, Somewhat difficult = 2, Very difficult = 1

Econometric Specification

We conceptualized the econometric specification as:

$$\text{Log(Seeking\_Treatment)} = \beta_0 + \beta_1 * \textit{Family\_History} + \beta_2 * \textit{Remote\_Work} + \beta_3 * \textit{Benefits} + \beta_4 * \textit{Care\_Options} + \beta_5 * \textit{Wellness\_Programs} + \beta_6 * \textit{Seek\_Help} + \beta_7 * \textit{Anonymity} + \beta_8 * \text{Leave} + \varepsilon$$

Where β-coefficients represent odds ratio.

While doing this, we considered the general rule of thumb that logistic models should be used with a minimum of 10 outcome events per predictor variable (Concato, et. al. 1995). Since we have ten predictor variables at this point, we will need a minimum of 100 records to use logistic modeling. Since the dataset contains more than the minimum records needed, we can safely go ahead and build a logistic regression model with these variables.

Data Cleaning/Validation:

Data was cleaned using SAS 9.4. The dataset included survey responses from several countries. Since the countries other than the USA had between 1 to 10 entries; we have excluded them from our analysis, as the sample size is too small to represent the whole country. The dataset also had entries from people who are either working for an organization or are self-employed. As, we are only focusing on providing recommendations to the companies on what strategies/ policies they can implement to encourage employees suffering from mental health conditions to seek treatment, we excluded responses from employees who are not self-employed. Also, there were certain records where age had values that were out of range. We excluded these records. Only responses from employees with a reported between 18 to 75 were included. The Gender column had only 14 entries for Other Genders (other than Male and Female) which is too small a sample size to represent the whole population. Hence, we excluded them from the analysis. We accomplished the cleaning process of the data using PROC SQL procedure. After the cleaning of data, we were left with 687 records in our dataset. We used PROC FREQ with TABLES option to determine the frequency distribution of each column and cleaned the data.

Analysis:

The data was analyzed using SAS 9.4. To ensure that there is no multicollinearity we needed determine the cross-correlations. We first ran a PROC CORR procedure on all the variables to determine the correlation between them. In Table 2 we present the correlation between the different variables. It may be noted that the off-diagonal elements are low indicating a lack of multi-collinearity.

Table 2: Correlation Coefficients

Pearson Correlation Coefficients, N = 687 Probability > |r| under H0: Rho=0											
Variable	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
1. Treatment	1.00										
2. Age	0.06	1.00									
3. Male	-0.19	0.10	1.00								
4. Remote_Work	0.03	0.17	0.02	1.00							
5. Family_History	0.36	-0.02	-0.11	-0.01	1.00						
6. Benefits	0.22	0.17	-0.08	-0.08	0.11	1.00					
7. Care_Options	0.32	0.12	-0.05	-0.00	0.09	0.44	1.00				
8. Wellness_Programs	0.02	0.11	0.02	-0.09	0.01	0.41	0.28	1.00			
9. Seek_Help	0.05	0.23	0.05	-0.06	0.02	0.46	0.34	0.59	1.00		
10. Anonymity	0.18	0.01	0.01	-0.08	0.02	0.36	0.40	0.32	0.37	1.00	
11. Leave	-0.05	-0.05	0.06	0.02	-0.03	0.12	0.08	0.14	0.14	0.19	1.00

To test for multi-collinearity, we computed the Variance Inflation Factor (VIF) using the PROC REG procedure. Tabachnick and Fidell (2013) stated that a VIF greater than 10 suggests an existence of collinearity problem.ll the variables had a VIF of less than two which indicates that none of the variables are multicollinear with each other. So the next step we took was to do a factor analysis to determine which variables can be grouped together.

Before doing the factor analysis, we ran reliability tests using PROC CORR ALPHA. We ran one reliability test on Benefits and Care_Options together, and another reliability test on Wellness_Programs and Seek_Help together. These tests gave us Cronbach alphas of 0.61 and 0.74 respectively, which indicates that these are acceptable (Nunnally, J.C. & Bernstein, I.H. 1994). Then we ran the factor analysis to determine the Composite score using PROC FACTOR procedure. We gave all the ten factors as input and indicated to SAS that we want to use eight factors. We came up with the number 8 because we wanted Benefits and Care_Options to be grouped together and Wellness_Programs and Seek_Help to be grouped together based on the correlations found.

In Table 3, we illustrated the results of Reliability testing and Factor analysis. In the table, the variables that have a score of 0.4 and higher under each factor will be a part of that particular factor. The variable Benefits is having more than 0.4 in two factors (Factor1 and Factor2). We considered it as part of Factor2 as the score is higher in Factor2. Next, we ran the logistic regression model by using Treatment as the Dependent Variable and these eight variables as the Independent Variables using the PROC LOGISTIC Descending procedure. The C-statistic (sometimes called the "concordance" statistic or C-index) is a measure of goodness of fit for binary outcomes in a logistic regression model. We got a c-score of 0.801 which indicates that the model is a very good fit. The coefficients for the regression equation and their respective p-values are listed in Table 4.

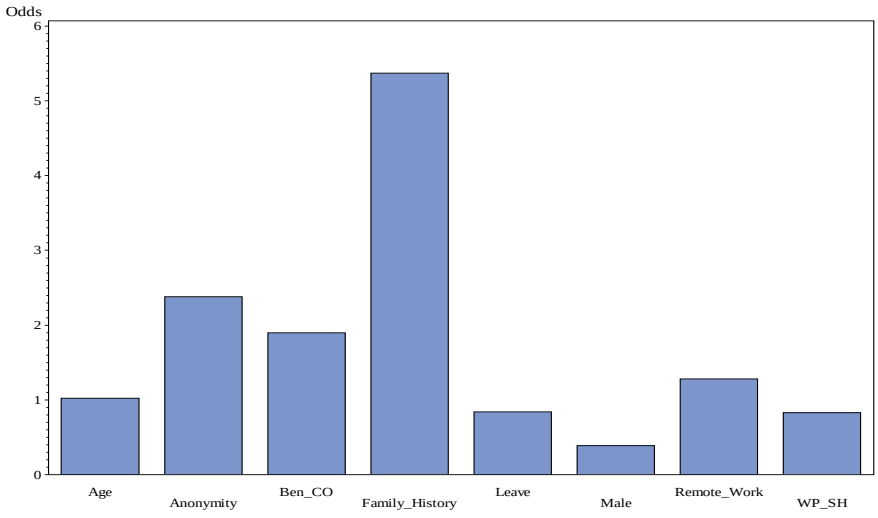
Table 3: Reliability testing and Factor Analysis

Variable	Items	Cronbach alpha	VIF	Rotated Factor Pattern							
				Factors							
				1	2	3	4	5	6	7	8
WP_SH	Wellness_Program	0.74	1.62	**0.89**	0.13	-0.04	-0.03	0.007	0.05	-0.011	0.07
	Seek_Help		1.82	**0.81**	0.2	0.18	-0.03	0.04	0.05	0.011	0.19
Ben_CO	Benefits	0.61	1.55	0.43	**0.69**	0.12	-0.11	-0.11	0.09	0.08	0.02
	Care_Options		1.38	0.1	**0.88**	0.02	0.06	0.01	-0.007	0.02	0.23
Age	Age	NA	1.13	0.1	0.08	**0.98**	0.09	0.05	-0.04	-0.01	-0.008
Remote_Work	Remote_Work	NA	1.05	-0.05	-0.01	0.09	**0.99**	0.008	0.02	-0.004	-0.04
Male	Male	NA	1.04	0.03	-0.04	0.05	0.008	**0.99**	0.03	-0.05	0.003
Leave	Leave	NA	1.06	0.08	0.04	-0.04	0.02	0.03	**0.99**	-0.02	0.08
Family_History	Family_History	NA	1.03	0.005	0.06	-0.01	-0.004	-0.05	-0.02	**0.99**	0.008
Anonymity	Anonymity	NA	1.37	0.23	0.24	-0.01	-0.05	0.003	0.09	0.01	**0.93**

Table 4: coefficients for the regression equation and their respective p-values

Analysis of Maximum Likelihood Estimates				
Parameter	Estimate	Standard Error	Wald Chi-Square	Odds Ratio
Age	0.02*	0.0123	2.8095	1.021
Male	-0.94***	0.219	18.2628	0.392
Remote_Work	0.25	0.2048	1.451	1.28
Family_History	1.69***	0.1886	79.4021	5.37
Ben_CO	0.64***	0.0958	44.9098	1.9
WP_SH	-0.18*	0.0943	3.7021	0.834
Anonymity	0.87***	0.2177	15.9161	2.384
Leave	-0.19**	0.094	3.9241	0.83
Note: *** p<0.01; ** p<0.05; * p<0.1;				

Visualization:



Generalization: Discussion of Results:

SAS procedures used in this paper to analyze the data using the conceptual model (econometric specification) can be generalized to other settings. The conceptual model can be generalized by making suitable changes to the predictor variables for modeling other settings. More variables can be added to obtain a better R-square value.

The above results signify that Family History has the highest impact on a person seeking treatment. So an organization can help their employees by making them more aware of their family history. Employees with a '*family_history*' of mental health problems with a can be used to advised to seek treatment if their behaviors indicate symptoms problems of mental illness. The second highest impact comes from Anonymity. A company can hire an external entity to preserve the anonymity of employees who are seeking treatment. Since the external entity will be governed by HIPAA regulations, the employees' confidentiality is maintained, and they are not discriminated by managers and colleagues.

The next highest impact comes from whether or not the organization provides Mental health benefits and Care Options to their employees. An organization can look at providing insurance to include mental illnesses. Finally, the results indicate that Females are more inclined to seek treatment for mental illness than Males. An organization can focus on helping their male workforce so that males also come forward to seek treatment.

Suggestions for Future Studies:

1. Even though the original data has participants from many Countries and Genders, the records belonging to countries other than USA and gender other than Male and Female is very less which can't be generalized to the whole population. Hence, efforts should be made to collect more diverse data to study mental health patterns in various cultures.
2. Another factor 'amount of time a person has had mental illness before seeking treatment' can be included to determine a pattern in the average time taken by a person before seeking treatment. This variable, if measured, can allow an organization to calibrate its efforts better. The reduction in the extent of days lost or productivity loss can be measured, and these factors can be used to measure the effectiveness of an organization's efforts. Other predictor variables can be added to the data to enhance its predictive capability.

Conclusion:

Mental health is a growing concern for both organizations and society overall. Encouraging employees' to focus on their mental health and if diagnosed, aiding them to seek treatment will make the Organization a safer place and will make people contributors to the society. Organizations can focus their efforts in a more purposed fashion and can make a difference in the lives of their employees and reap the rewards of

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