

# **DETERMINANTS OF DEPRESSIVE SYMPTOMS IN UNDERGRADUATE UPLB STUDENTS: A JOINT CORRESPONDENCE ANALYSIS**

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## **ABSTRACT**

Depression is one of the most common mental disorders that is prevalent worldwide, afflicting anyone, regardless of socio-economic status or educational attainment. This is a growing concern particularly among students that school administrators recognize the immediate and urgent need to address the problem. This study was conducted in the University of the Philippines Los Baños (UPLB) to determine the factors associated with depression symptoms using Joint Correspondence Analysis. A total of 169 students were randomly selected as respondents in a probability survey conducted from February to April 2018. Undergraduate students enrolled in the 2<sup>nd</sup> semester, AY 2017-2018 were considered eligible respondents. The prevalence of students with depressive disorder in UPLB is about 8 percent, and the prevalence of students with University Student Depression Inventory (USDI) score of 111 to 150 is about 14 percent. The characteristics that were found to be associated include College where student came from, age of the student as of their last birthday, having or not having a part-time job, type of serious illnesses, number of cigarettes smoked in a typical day, number of hours allocated for internet use in a typical week, number of times spent drinking alcohol in a typical week, satisfaction with family's financial condition, degree of closeness with family, degree of closeness with peers, have consulted or have not consulted a psychiatrist over the past 6 months, and diagnosed or not diagnosed with depression were found to be associated with the USDI scores. The associations of the significant variables were illustrated using Joint Correspondence Analysis.

*Keywords: depression, prevalence, probability survey, USDI, Joint Correspondence Analysis*

## **INTRODUCTION**

Depressive disorder is one of the two main diagnostics of common mental disorders. According to the World Health Organization (WHO), these common mental disorders (anxiety disorder and depressive disorder) are highly prevalent worldwide with around 300 million people suffering from depression alone. According to Cloutre (2010), depression is best described by a variety of factors interacting with each other, and its effect differs from one person to another. The many known factors affecting depression may be classified into two major categories; biology and psychology. Aside from the general population, anxiety and depressive disorders were found to be common among university students (Tahmasbipour & Taheri, 2011). In 2016-2017, about 3.6 million students were enrolled in higher education institutions in the Philippines. In 2015, the prevalence of depressive disorder in the Philippines was estimated to be 3.3 percent of the total population or around 3.3 million Filipinos (World Health Organization, 2017).

The latest statistics on depression in the Philippines justify urgent measures to improve programs that raise community awareness on depressive disorder. While researches about mental illnesses are prioritized, only a handful have been carried out in the developing world (WHO, 2007). In the University of the Philippines Los Baños, only few researches have been conducted to address the growing concern of depression in students. Many of these researches used purposive sampling and case studies. This study used probability sampling with the aim of generating estimates of relevant depression parameters that can represent the current state of the problem in UPLB. The results of this study can help increase awareness on depressive disorder symptoms and on the factors associated with it. This research may subsequently help

university administrators to identify strategies to address the problem thereby preventing suicide among Filipino students. Furthermore, data may be of help to other departments, organizations, or parties concerned in fighting depression not just in the University of the Philippines, but to the whole population of university students in the Philippines.

This study aims to provide a quantitative framework that may be used as basis in formulating policies, regulations and/or programs on the improvement of mental health in the university. Specifically, the study aims to:

1. estimate the prevalence of depression among undergraduate UPLB students;
2. estimate the prevalence of undergraduate students with high depressive symptoms;
3. identify risk factors for depressive disorder and depression symptoms among undergraduate students of UPLB; and
4. illustrate the association between the identified risk factors.

## **METHODOLOGY**

The study employed a stratified random sampling with college affiliation as the stratification variable. The number of sampled students was obtained with  $p$  = proportion of students having depressive disorder symptoms set to 0.5, with 10 percent level of significance, and margin of error of 0.01 giving a total of 169 sampled undergraduate students. Of the 169 eligible students, only 135 were successfully enumerated, leading to 79.88 % response rate and 20.12 % nonresponse rate. Pre-testing was participated by selected students, and consultation with the university psychiatrist was done to evaluate the validity and relevance of the questions in the questionnaire. Modifications in the questionnaire were done accordingly after pre-testing. The survey questionnaire has five sub-components; About the Respondent, Health and Lifestyle, Family, Peers, and University Student Depression Inventory.

Descriptive statistics were generated including the Cronbach's  $\alpha$ . Estimates of the proportion of undergraduate students diagnosed with depression and with depressive disorder symptoms were obtained. Rao-Scott Chi-square test of independence was performed to assess the association between the level of depressive disorder and the explanatory variables. Cramer's V was used to measure the degree of association among the variables. Variables that were found to be significantly associated with the level of depressive disorder symptoms were further analyzed using Joint Correspondence Analysis. All statistical analyses were performed in STATA/SE 14 with 10% level of significance.

## **RESULTS AND DISCUSSION**

A total of 135 UPLB students participated in the survey conducted from February to April 2018. Almost half of the respondents (48.89 percent) came from the College of Agriculture and Food Sciences, College of Arts and Sciences, and College of Engineering and Agro-Industrial Technology. A large percentage of the respondents (81.48 percent) have no known family history of depression. Majority of the respondents (91.85 percent) have not visited a psychologist over the past 6 months prior to answering the survey.

The Cronbach's  $\alpha$  is equal to 0.9178. This suggests that the survey indeed measures depression symptoms in undergraduate UPLB students. About 2 in 30 students in UPLB are diagnosed with depressive disorder. Based on Figure 1, the estimated 7 percent of students with diagnosed depression came from CAFS, CDC, CEAT, CEM, CHE, and CVM. The largest estimated proportion of students not diagnosed with depressive disorder are found in College of Arts and Sciences and College of Engineering and Agro-Industrial Technology.

According to the UPLB Health Service resident psychologist, the University Students Depression Inventory or USDI is a good way to measure the mental health status of a student. It can detect a student's vulnerability to developing depression, but it does not necessarily prove if a student actually has depression. A large proportion of the student population in UPLB have low to middle USDI scores. Around 13 percent or 1112 students are at high risk of having depressive disorders. Although the estimated proportion of students with diagnosed depression is comparatively low compared to the proportion of students with depressive symptoms, this figure shows that there are more students at risk in developing depression.

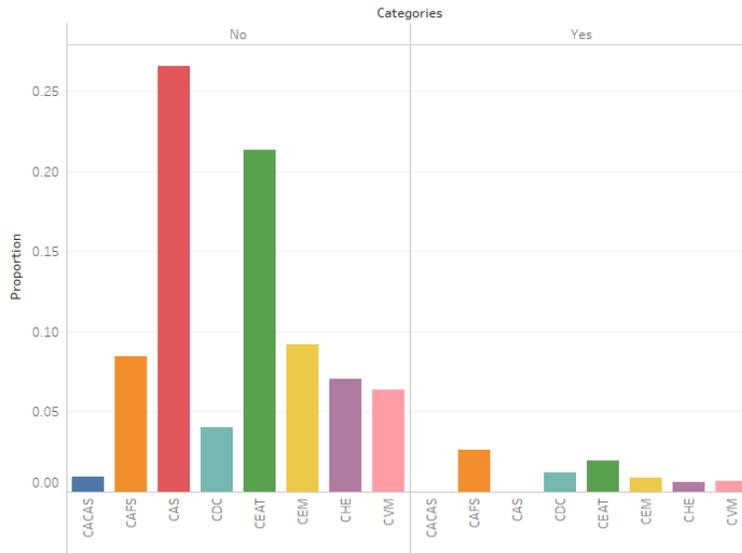


Figure 1. Estimates of proportion of university students with diagnosed depression for each stratum

Data on 33 variables were generated from the survey questionnaire. Of this number, 30 were considered as explanatory variables for the University Student Depression Inventory scores and were tested for associations at 10 percent level of significance. Table 1 presents the 12 explanatory variables found to be significantly associated with the University Student Depression Inventory scores.

Table 1. Significant factors affecting depression symptoms among undergraduate UPLB students.

Variable Name	Rao-Scott Test Statistic	p-value	Cramer's V
College where the student came from	1.5682	0.0279	0.0482
Age of the student as of last birthday	1.8197	0.0256	0.0581
Having or not having a part-time job	2.5616	0.0285	0.1377
Type of serious illnesses	1.9266	0.0094	0.0534
Number of cigarettes smoked in a typical day	1.6155	0.0735	0.0632
Number of hours allocated for internet use in a typical week	1.6905	0.0498	0.0646
Number of times spent drinking alcohol in a typical week	1.7508	0.0688	0.0805
Satisfaction with family's financial condition	2.2635	0.0018	0.0647
Level of closeness with family	2.6125	0.0044	0.0984
Level of closeness with peers	2.4985	0.0069	0.0962
Have consulted or have not consulted a psychiatrist over the past 6 months	3.0413	0.0114	0.1501

Diagnosed or not diagnosed with depression	1.9408	0.0880	0.1199
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After performing the tests of association, Joint Correspondence Analysis was performed for all significant variables, and some respondent profile and characteristics relating to health and lifestyle, family, peers, and USDI scores. The normalization method used is the principal normalization as it allows the interpretation of row and column coordinates through proximity. Figure 2 represents the correspondence plot of principal coordinates which shows the pattern of association between USDI scores and all significant variables. The associations can be interpreted as follows:

Students with USDI scores ranging from 30 to 70 showed that they are about 17 to 18 or 25 to 26 years old, belonging to CEM or CACAS, with no part-time job, have diabetes or no serious illness, smokes 0 to 1 piece of cigarette in a typical day, allocates 4 to 7 hours for using the internet in a typical week, drinks alcohol 0 to 1 times in a typical week, very satisfied or satisfied with their family's financial condition, have high level of closeness with their family.

On the other hand, students with USDI scores of 71 to 90 or 111 to 130 are about 19 to 20 years old, belonging to CAFS or CHE, have polycystic ovarian syndrome, smoke 2 to 5 pieces of cigarettes in a typical day, allocate 8 to 11 hours for using the internet in a typical week, have low level of closeness with their family and peers, have visited the psychiatrist over the past 6 months and diagnosed with depression.

Students who belong to CVM, CEAT, or CDC, with part-time job, have cardiovascular disease, kidney stones or obesity, smoke more than 7 pieces of cigarettes in a typical day, drink alcohol 2 to 3 or 6 to 7 times in a typical week, neutral, dissatisfied, or very dissatisfied with their family's financial condition, have mid-level of closeness with their family and peers tend to have USDI score of either 91 to 110 or 131 to 150.

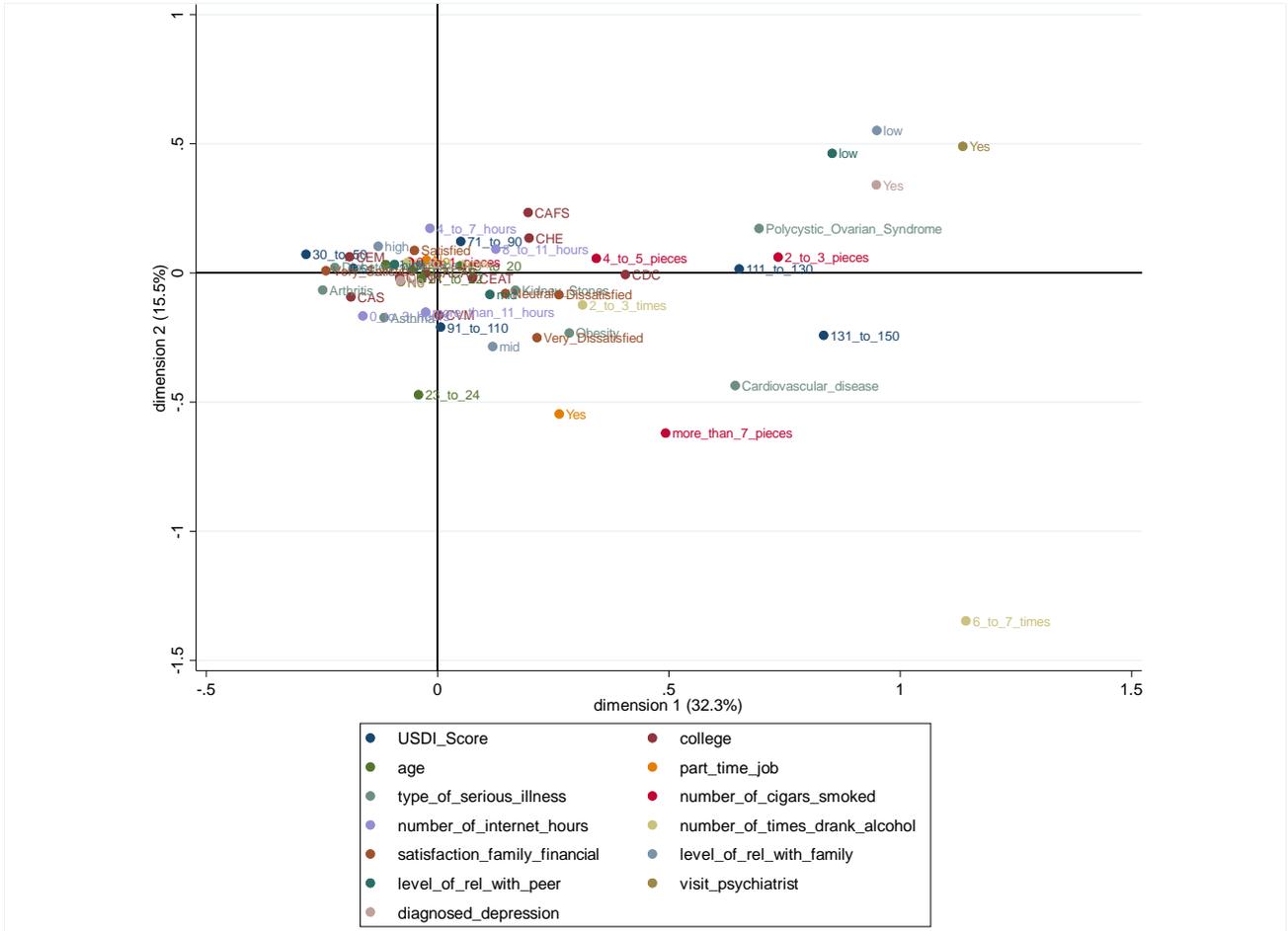


Figure 2. Overall biplot of all significant variables of USDI score

## **SUMMARY AND CONCLUSION**

In recent years, a number of suicide or depression-related problems among students have occurred unusually more frequent alarming university administrators the University of the Philippines Los Baños. There are numerous programs that aim to raise awareness but there are no existing estimates of students with depressive disorder. To analyze and provide a quantitative framework to address this concern, a stratified random sampling was employed to obtain a representative sample of the undergraduate students of the university.

This study supports the notion that indeed there is a presence of depression in the university and there are students that are vulnerable to develop depression. It is important to include the associations of factors found to be associated with depression symptoms in formulating policies in the university. With this, the concerned organizations can provide solutions regarding mental health specifically catered for the students in UPLB.

## **RECOMMENDATIONS**

It is recommended to include graduate students for the next survey to widen the scope of the study and to test if there is variability of depressive symptoms in undergraduate and graduate level. It is also suggested to come up with better way of constructing the USDI scores and the closeness level of family and peers that is accepted in both statistics and psychology. It is also recommended to explore the data using other statistical procedures.

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