CHAPTER FOUR

Madness, character, or pathology: Perceptions of Mental Illness in Medical Students

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ABSTRACT

Perceptions about mental illness have a strong effect on how one interacts with mental health patients, and medical students are no exception to this. The meanings attributed to mental illness by medical students can impact the way they clinically approach mental health cases in their future career. In this study, a qualitative analysis was conducted on the perceptions of mental illness and its treatment by a group of undergraduate students from a Bachelor of Surgery degree program at a public university in Mexico City. A sample of 444 medical students from all years answered a voluntary questionnaire with vignettes related to mental health problems, a semantic network for the term "mental illness" was created, and 24 semi-structured interviews were carried out. The data showed that depression was perceived asmore associated with men, and it was identified and described more fully by students with higher grades. Anxiety was perceived as a way of being and was more highly associated with women. In the interviews, students showed a perception of mental illness related to aggressiveness and difficult handling of patients. Likewise, the semantic networks identified the word "madness" as part of the meaning attributed to mental illness by the medical students.

Keywords*:* Mental Health, Perception, Medical Student, Pathology, Post-secondary Education.

INTRODUCTION

How one defines an illness can predetermin their attitudes and behaviours towards it (Heider, 1958). For this reason, it is important to understandperceptions surrounding a given pathology, and the relationship between this understanding and care seeking, in order to root out bias and more effectively treat these conditions.

Perceptions of mental illness has been found to vary greatly according to the particular disorder, with the severe disorders such as schizophrenia generating the least favorable beliefs and attitudes. (Al-Alawi et al., 2017; Kurihara et al., 2000; Petrie et al., 2008; M. Á. Ruiz et al., 2012). Beliefs about the causes of mental illness also influence the treatment that individuals seek out and how they interact with that treatment (Petrie et al., 2008).

Negative perceptions of mental illness create stigma (Aghanwa, 2004; Al-Alawi et al., 2017; Bhugra, 1989; Graf et al., 2004; Kurihara et al., 2000; Petrie et al., 2008; Rossetto et al., 2019; Zárate P et al., 2006), which can be deleterious to the quality of life of patients and their families (Alarcón, 2017; Goffman, 1970; Graf et al., 2004; Kurihara et al., 2000; Mascayano et al., 2015; Petrie et al., 2008; Restrepo et al., 2007; M. Á. Ruiz et al., 2012), because of resulting unfavorable disease progression and not seeking adequate care (Flores, 1990; Petrie et al., 2008; Reynoso et al., 2012; Sartorius, 2003; Waugh et al., 2017).

Although new initiatives are frequently implemented to address the problem negative perceptions and attitudes towards mental illness and its treatment (Al-Alawi et al., 2017; Crisp, 2000; Rossetto et al., 2019), misconceptions, discrimination, and rejection continue to prevail in most of the world, while acceptance and tolerance towards it is has only reached a small population. (Aghanwa, 2004; Angermeyer et al., 2014; Bhugra, 1989; Graf et al., 2004; Kurihara

et al., 2000; Robinson & Henderson, 2019; Rossetto et al., 2019; Waugh et al., 2017).

Population, such as healthcare workers are of particular interest regarding perceptions of psychopathology, given the role they play in its care and management. The meaning healthcare workers attribute to mental illness and its treatment can greatly influence not only how they treat psychiatric patients in their practice, but also how they care for their own mental health. (Waugh et al., 2017). For these reasons, medical students are an ideal focus of study for possible intervention, as it is they who will be in charge of providing care, forming a part of health resources, and working to develop program policies in the decades to come.

Some medical students have been found to have negative perceptions and attitudes towards psychiatry, mental pathology, and its treatment (Baena & Navarro, 2018; Balon et al., 1999; Economou et al., 2017; Feldmann, 2005; Galka et al., 2005; Pailhez et al., 2005; Zárate et al., 2006). Nonetheless, authors have suggested that as these students gain more knowledge and experience, these perceptions could change (Adhikari, 2017; Chung et al., 2001; Economou et al., 2017; Galka et al., 2005, 2005; Pailhez et al., 2005; Reddy et al., 2005; Wilkinson et al., 1983), resulting in improved patient care.

This study used a phenomenological design (Lévano & Cecilia, 2007) and qualitative methods, with the objective of identifying and analyzing perceptions of mental illness and its treatment among a group of current medical students at a public university in Mexico City.

METHODS

Participants

The target population of this research was medical school students at a public university in

Mexico City. An open invitation was extended to students in all six years of schooling, and a total of 444 volunteered for participation. All were enrolled in this degree program (corroborated by their class list or current school identification) at the time of the invesigation, voluntarily accepted to participate, and signed the informed consent document.

Because the primary research approach was qualitative in method, the number of participants depended on information saturation, which means thath subjects were chosen based on characteristics of interest to the investigation, and participants were included as long as they continued to produce an authentically new understanding of the studied phenomenon (Olabuénaga, 2012; J. I. Ruiz, 2012; Taylor & Bogdan, 1987).

Instruments

This study used a questionnaire that was validated by psychiatrists who also teach the "Introduction to Mental Health" course at the university. In addition, the questionnaire was piloted with four students from each year of the medical school program in order to test comprehension of the terms and the pertinence of the questions. Suggestions were considered when developing the final version of the instrument.

The questionnaires were self administered, brief, and easy to answer for the students. Based on the most prevalent disorders in the Mexican population (Medina-Mora et al., 2003), two vignettes were used; one exemplifying a case of depression and another a case of anxiety. These vignettes provided a basis for the questions on the questionnaire:

- Do you think the person described has an illness? If yes, what illness?
- What are the causes of these difficulties?

- What would you recommend to improve these challenges?
- Do you think either of these individuals described needs to be seen by a psychiatrist?
- Do you believe that either of these individuals needs psychiatric medication?
- Have you (or has someone close to you) experienced any conditions such as those described in the vignettes or another similar condition? (see Table 1)

The questionnaire also asked for individuals to list 10 words related to mental illness.

Finally, semi-structured interviews (also known as focalized interviews) were conducted (Kvale, 2011) with participants that had agreed to be interviewed after completing the survey. The interview guide used for the interviews was constructed from the questionnaires, surrounding the following themes: (1) perception of mental illness, (2) the psychiatric patient, and (3) the psychiatrist and psychiatric treatment. This guide was piloted with three current students in order to develop the final version that was used with the participants.

Procedure

Given that the study was conducted in an educational context with large groups of students, a questionnaire was chosen as a primary method of approximating the perceptions and beliefs around the themes of interest. This was especially important to allow for effective collection of data from a large population in a relatively brief amount of time (Osorio Rojas, 1998). Finally, those particants who agreed to be interviewed were contacted.

Analysis

For the qualitative analysis of the information gathered through the questionnaire and

interviews, the researchers used condensation and categorization (Kvale, 1996). The transcribed interviews went through a process of cleaning and organization based on the themes and sub-themes. Once organized, the data were condensed, to be subsequently coded in mutually exclusive categories. Afterwards, a second more detailed categorization was conducted for each theme, reevaluating the relevance of the original categories. The process of categorization at two different points in time facilitated interpretation and analysis of the testimonies (Castro, 1996).

For the quantitative analysis, semantic networks (Reyes-Lagunes, 1993) were generated from the defining words that were most frequently mentioned by the group in response to the prompt of "mental illness." The researchers used the networks to calculate the number of concepts mentioned, the size of the semantic network, the semantic weight of each defining word, and the semantic distance between words. The data were obtained for the group as a whole, as well as separated by sex and school year.

All data collection, transcription and analysis were completed in Spanish, as it is the first language of both the primary researchers and the participants. Any quotations and analysis to be included in the manuscript was translated by NK, a bilingual member of the research team.

ETHICS

This research was evaluated and approved by the ethical and research committees of the university where it was conducted. Similarly, it was conducted according to the principles of the Declaration of Helsinki, and all participants provided their written informed consent.

RESULTS

Of the 444 students that responded to the questionnaire, 128 (28.83%) were first-year undergraduate students, 59 (13.29%) were second-year, 94 (21.17%) were third-year, 67 (15.09%) were fourth-year, 51 (11.49%) were fifth-year undergraduates or in their medical internship, and 45 (10.14%) were in their sixth year or year of social service. Men made up 168 (37.84%) of the students, while 276 (62.16%) were women. The ages ranged from 17 to 31, with a mean of 23.93 (*SD* = 6.9). The grade point average (GPA) of participating students at the time of the interview was between 7.7 and 9.9, with a mean of 8.57 (*SD*= 0.7).

Among the participants, 228 (51.35%) said that they had previous experience with mental illness (personally or someone close to them), and 97 (21.85%) said that they thad a personal history with a psychopathological condition.

There were 24 focus group interviews in total, with four interviews per class year: two with women and two with men.

Qualitative Analysis

Perception of Mental Illness in General

When asked what "mental illness" meant to the participants, they initially tried to respond with neurochemical, anatomical, or physiological explanations based on the medical definitions of psychopathology in order to show off their knowledge and diagnostic abilities as students. Nonetheless, the participants eventually gave way to a more authentic response in which they expressed how they actually perceive mental illness.

Perception of Depression

The majority of the participants referred to the condition described in the first vignette as "depression." However, the participants from their first three years of college used the word without specifically connecting it to an illness, while those in their 4th, 5th, and 6th years structured more elaborate and specific diagnoses: *"depressive affective disorder", "major depression", "major depressive episode"*. Some participants said that the patient in the described vignette had a pathology that was not psychiatric (e.g., anemia, paraneoplastic syndrome, malnutrition), which happened equally between students of different years.

Although the vignette did not indicate the sex of the patient, students predominantly (68%) identified the individual as male.

Some participants illustrated the condition with examples of their own academic situation, particularly among the first-year students.

With regards to causes of the symptoms described in the vignette, participants other than the first-year students said that the etiology was medical-biological, although women more frequently than men, mentioned the influence of socioeconomic factors as well as neurochemical ones. In terms of treatment, the option most frequently mentioned was psychological or medical care (not necessarily specialized), combined with changes in lifestyle.

Perception of Anxiety

The prevailing opinion on the second vignette was that the patient described was a woman. Although many said that the situation was an example of anxiety, there were a higher number of nonspecific diagnoses related to a particular way of being (attitude, personality type, coping

styles). As with the depression vignette, there were more responses with non-specific diagnoses among the students in the first three years, while those in the 4th year or later identified more specific diagnoses.

The participants mentioned non-psychiatric medical diagnoses more often than in the depression vignette, especially gynecologic (estrogen deprivation, polycystic ovary syndrome, ovarian failure) and gastrointestinal diagnoses (irritable bowel syndrome, dyspepsia). The majority attributed the cause of the symptoms described in the vignette as related to ways of being.

The therapeutic recommendations were primarily ones of self-care, followed by psychotherapeutic interventions: For example, "that they reflect on their actions," "they need to breathe," "go to therapy to control themselves," "resolve their conflicts in therapy."

Perception of Treatment for Mental Illness

From the interviews, attending psychological care was described as the best alternative for the diagnosis and treatment of mental illness. On the other hand, the participants interviewed said that treatment by a psychiatrist should only be considered in serious cases where there is a loss of contact with reality or risk of violence. This restriction to serious cases was the result of a perception that psychiatry was associated with using "strong" medications that that risk "making you an addict."

It follows that the majority of participants said that if they were to see a patient with a psychopathological condition, they would prefer not to treat them, and instead send them to a specialist (see Table 2).

Analysis of Semantic Network

For the use of semantic networks, participants were instructed to write 10 words that they thought defined the prompt of "mental illness". Of the 444 students, 97.5% (*n* = 433) responded to this prompt and were included in this analysis. They provided a total of 1,347 concepts, and the size of the semantic network was 562 words.

The network indicated depression as the principal word, with the most closely related word being anxiety with a semantic distance (Sd) of 5.32%, schizophrenia (Sd 56.79%) and psychiatry (Sd 63.38%). Psychosis (Sd 97.51%) and sadness (Sd 94.18%) were the defining words furthest from depression (see Figure 1).

When separating the generated networks by sex, the size of the semantic network for the women (431) was larger than that of the men (329). Depression was the most frequent defining word for both men and women. For the women, the closest words to depression were anxiety (Sd 39.36%), psychiatrist (Sd 48.94%) and medication (Sd 61.28%) and the furthest were psychosis (Sd 97.38%) and madness (Sd 94.75%). For the men, the closest were schizophrenia (Sd 44.38%), anxiety (Sd 56.85%) and madness (Sd 63.03%), while the furthest were hallucination (Sd 97.42%) and stress (Sd 94.83%) (see Figure 2).

Similarly, the networks were generated by year of medical school, from 1st to 6th. The first-year students had the network with the largest number of words (614) as well as the largest network (289). Those in their sixth year had the concepts (313) had a network with 167 unique words.

For all years, depression was the defining word with the most weight. For first-year

students, the closest defining words to depression were medications (Sd 38.80%), psychiatry (Sd 45.60%) and schizophrenia (Sd 56.60%), and the words furthest from depression were disorder (Sd 96.2%) and stress (Sd 92%). For second-year students, the closest words were anxiety (Sd 25%), psychiatry (Sd 40%) and medications Sd 65%), while the furthest were disorder (Sd 96.7%) and hallucination (Sd 92.5%). For those from the third year, the closest were anguish (Sd 52.86%), anxiety (Sd 59.37%) and schizophrenia (Sd 66.67%), and the furthest were psychiatry (Sd 96.7%) and psychosis (Sd 94.9%). For fourth-year students, the closest were psychiatry (Sd 31.32%), anxiety (Sd 41.05 %) and schizophrenia (Sd 52.11%), and the furthest were sadness (Sd 97.37%) and anguish (Sd 94.21%). The network for the fifth-year students reflected that the closest words were anxiety (Sd 31.18%), schizophrenia (Sd 64.71%) and madness (Sd 71.18%), and the furthest were psychiatrists (Sd 97.65%) and dementia (Sd 94.12%). Finally, in the sixth year, anxiety (Sd 35.71%), psychiatry (Sd 54.29%) and schizophrenia (Sd 65%) were the closest words, while sadness (Sd 97.50%) and psychosis (Sd 94.29%) were the furthest (see Table 3).

DISCUSSION

The perceptions of medical students towards mental illness is informed by their education, backed by theory, and denotes a medico-biological point of view. As such, one would expect a neutral view of mental illness without stigma (Baena & Navarro, 2018; Balon et al., 1999; Feldmann, 2005; Galka et al., 2005; Pailhez et al., 2005; Zárate P et al., 2006). Nonetheless, the testimonies gathered in this study show persistentperceptions of patients with mental illness as being aggressive and difficult to manage. Similarly, “madness” appeared as a word attributed to mental illness in the semantic networks.

There are diverse elements that may be behind these perceptions. They could speak to a lack of knowledge and experience (professionally and personally) interacting with individuals with mental illness—as has been seen previously (Adhikari, 2017; Chung et al., 2001; Economou et al., 2017; Galka et al., 2005; Reddy et al., 2005; Wilkinson et al., 1983). Each year of medical education, as students gain more scientific information and direct experience with psychiatric patients, they gain a greater awareness of this topic. Given this, one would expect that students in their final years of school would have a less stigmatized point of view and would use the word "madness" less often in their descriptions, however this stigma seems to continue to be present in the understanding of mental illness irrespective of the number of years in school. This finding emphasizes the need for reflection on whether knowledge and professional training are enough to address this stigma and create a better understanding of mental illness.

It was striking how—particularly in the depression vignette—one can see how perceptions became more closely aligned with scientific information with each year of training. Later year students identified depression as an illness, something that may be attributed to the fact that depression is the most well-known disorder with the most widely distributed information, and thus is more normalized as an illness.

Conversely, with regards to the perception of anxiety, there was a clearly negative and even aggressive attitude towards the associated symptomatology. Students stigmatized it and diminished it from an illness to a way of being. The moment something is identified as an illness, a doctor seeks how to provide care, but if it is merely a way of being inherent to the person, all that is left is learning to live with it. Because these pathologies are not seen as serious as an illness such as schizophrenia (Al-Alawi et al., 2017; Kurihara et al., 2000; Petrie et al., 2008; M. Á. Ruiz

et al., 2012) they become invisible, and thus have limited opportunities for identification and timely treatment.

While we can observe that there is a positive position towards seeking mental healthcare among the students, there remains prejudice surrounding psychiatric care due to the belief that psychiatric treatment implies a serious mental illness or losing contact with reality. Similarly striking is the incorrect perception that medications for mental health treatment are addictive. In this respect, the lack of understanding of how psychopharmaceuticals function contributes to prejudice and stigma (Aghanwa, 2004; Al-Alawi et al., 2017; Bhugra, 1989; Graf et al., 2004; Kurihara et al., 2000; Petrie et al., 2008; Rossetto et al., 2019; Zárate P et al., 2006), which can cause delays in seeking and adhering to care.

Personal experience is important to consider as an element that can improve understanding of mental illness and above all ameliorate the stigma. Integrating experience into education could therefore improve students' understanding of mental illness. Medical students acquire knowledge primarily through the descriptions of elements relating to mental health, such as mental illness, anxiety, and depression, especially early on. It is essential, from the professional as well as personal points of view, for their education to incorporate more experiential elements that allow them to get closer in a more authentic way to mental healthcare and mental illness. If healthcare professionals have prejudices towards both mental illness and mental healthcare, one can expect that these prejudices are expressed both in their professional as well as their personal lives.

Increased dissemination of information is also crucial for understanding mental illness, helping to break down the barriers to care that prejudice establishes and diminish the beliefs of psychiatric patients as aggressive. This information could take many forms, including prevalence

of common mental disorders, real examples of mental illness, and the consequences of lack of care.

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Tables and Figures

Table 1

Description of the Vignettes for the Questionnaire

Type of Vignette	Description of the vignette
Vignette of depression:	A 20-year-old goes to see the doctor because, starting a month ago, they have had problems getting to sleep and they wake up during the night. In addition, their appetite is gone and they have lost weight. They feel sad and lacking in energy, so they don't run like they used to, and when they do, they don't enjoy it, saying that it is difficult because their legs feel heavy. Their family members say that they are irritable and even verbally aggressive, but later they regret it and feel guilty. Their grades in school have gone down, they are having trouble focusing on studying, and prefer not to participate in class (this wasn't difficult before). There is a marked lack of motivation and they say that they don't enjoy life anymore.
Vignette of anxiety:	This individual is 39 years old. Since adolescence they have worried excessively about concerns that are trivial to others (school, work, family, etc.). They have two daughters, one and four years old, and now they easily get irritated with them and have little tolerance for their tantrums. They mention that, for the past number of years, they have felt tension in the nape of their neck and their back, headaches, sometimes their hands sweat, they have had palpitations and the sensation of pressure in their chest. Frequently, they note that they are thinking about everything in a negative and catastrophic manner, which causes more distress and they are always waiting for something bad to happen. For some time, they have suffered from gastritis and colitis that gets worse in the tensest periods of time. Their sleep is superficial and low quality so they can't get very much rest. They mention that they don't know what is happening to them, but the situation is getting worse.

Table 2

Participant Testimonies

Category	Testimony
Perception of mental illness in general	"… There are flaws in brain processing that makes the mind sick, and suffer from schizophrenia or things like that […] Well, I would say that people go crazy because their brain can't function anymore…" (1st year student) "The brain suffers from a physiological imbalance […] I think that it is when you can't be in contact with reality anymore… something has to happen in your brain so that you disconnect a […] yes it has to be very serious, how scary would it be to have something like that happen to you! …" (3rd year student) "… The DSM-IV and the ICD-10 have a classification of the mental illnesses […] I think that it does have to have a neurochemical cause, and if not, then they wouldn't consider them pathologies, but I don't know how well understood they are … People call it madness […] I haven't really seen sick people like that. And I don't know if I would want to see that! ... I want to be a pediatrician, so, I doubt I will see many crazy people! …" (4th year student) "A mental illness is an illness of a very specific part of the body: the brain […] they are multifactorial, there is a genetic predisposition and it makes it so that your neurotransmitters and secondary messengers are altered leading to the symptoms of a mental illness […] I saw some patients like that in my internship […] I, with my little experience, can say that you have to know how to manage them, and if you don't, better refer them, because they can become very aggressive, they are out of it, and altered, and they can be very dangerous!" (6th year student)

Perception of depression:	"… I think they do have something; I would say that it is depression […] no, not sick, it is that sometimes something so intense happens that the sadness comes, and I think that he is very sad…" (1st year student)
	"… It is an affective disorder, because they have low mood, for a short time. It would be dysthymia if it were for more than six months…" (4th year student)
	"… It is major depressive disorder…" (6th year student)
	"… This person has a problem, and it is that they are under a lot of stress because they are not doing well in school…" (1st year student)
	"…Yes, I'm sure they're studying medicine, and that's what is wrong…" (2nd year student)
	"The person in the case could be depressed because of their difficulties in school, with family or friends, but they wouldn't have gotten sick without a predisposition to depression. They have a disequilibrium of the function of their neurotransmitters…" (4th year student)
	"Depression like it is described, is due to alterations at the level of neurotransmitters that affect functions that are important to circadian rhythms, neuroendocrine axes, and emotional and cognitive responses." (6th year student)
	"…Go to the doctor and take medication that helps them, adequate nutrition, take some classes like painting, yoga, or something that calms them down…" (1st year student)
	"… Look for psychological therapy...start psychiatric treatment..." (3rd year student)
	"…The first is to go to a general medical consult for physical evaluation and labs, and from there get a consult in psychotherapy, of whatever type, but that they are comfortable…" (5th year student)

Perception of anxiety:	"… It is prudent to do a differential diagnosis with endocrinopathies that go along with cervicouterine cancer, like hyperthyroidism and even pheochromocytoma…" (3rd year student) "… The person described does not have a disorder nor an illness, surely it is a woman with a borderline personality…" (6th year student) "… Yes, they have a somatization disorder and they have a horrible personality, but I also would say, that the woman is a damn crazy woman!" (6th year student) "… More than an illness, the person in the case seems that they are very susceptible to stress, and because of that they have intestinal problems and they hit their daughter…" (1st year student) "… I think that person does have something, I would say that, they have a disorder of intolerance! …" (2nd year student) "… They aren't resilient, it's bad! …" (4th year student) "… It's a person with an obsessive character …" (5th year student)
Perception of treatment for mental illness:	"… Generally, someone gets through it alone, you know what you have and you resolve it, but if you need orientation, well you go to a psychologist […] To the psychiatrist? No, there you are talking about something very serious, you lost your mind or something like that! …" (6th year student) "… Psychiatrists are for crazy people! …" (3rd year student) "… Truthfully, I wouldn't know what to do if a person like that [vignette of anxiety] starts to tell me everything, imagine if it gets worse! … yes, or well, like you say, if I interrogate them well and I get to the diagnosis and I can tell them what they have, but nothing more! … What do you do with someone like that? … I would tell them to go to psychotherapy to see if it changes …" (3rd year student) "Those patients you go around! … It's that they can get very intense! … if they have appendicitis or colecistitis, well you operate and you know that with that it improves … if you get one with

depression, well you tell them they have depression and that they have to go to a psychologist or psychiatrist to get care …" (6th year student)

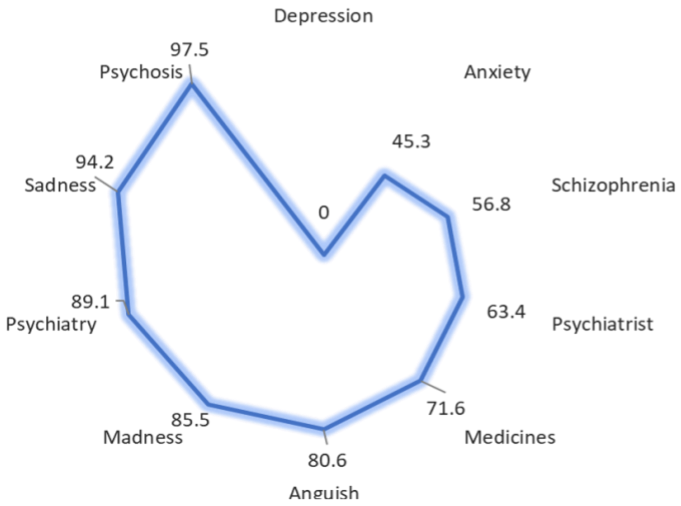
Table 3

Semantic network of mental illness of students by grade

1st year			2nd year			3rd year		
Defining words	Semantic weight	Semantic distance	Defining words	Semantic weight	Semantic distance	Defining words	Semantic weight	Semantic distance
Depression	500	0	Depression	240	0	Depression	630	0
Medicines	306	38.8	Anxiety	180	25	Anguish	297	52.8
Psychiatrist	272	45.6	Psychiatrist	144	40	Anxiety	256	59.3
Schizophrenia	217	56.6	Medicines	84	65	Schizophrenia	210	66.6
Psychiatry	168	66.4	Schizophrenia	72	70	Hallucination	114	81.9
Madness	115	77	Madness	45	81.2	Stress	90	85.7
Anguish	84	83.2	Psychosis	36	85	Medicines	64	89.8
Sadness	60	88	Stress	27	88.7	Psychiatrist	48	92.3
Stress	40	92	Hallucination	18	92.5	Psychosis	32	94.9
Disorder	19	96.2	Disorder	8	96.67	Psychiatry	15	97.6
4th year			**5th year**			**6th year**		
Defining words	**Semantic weight**	**Semantic distance**	**Defining words**	**Semantic weight**	**Semantic distance**	**Defining words**	**Semantic weight**	**Semantic distance**
Depression	380	0	Depression	340	0	Depression	280	0
Psychiatrist	261	31.3	Anxiety	234	31.1	Anxiety	180	35.7
Anxiety	224	41	Schizophrenia	120	64.7	Psychiatrist	128	54.2
Schizophrenia	182	52.1	Madness	98	71.1	Schizophrenia	98	65
Medicines	144	62.1	Medicines	78	77.0	Medicines	78	72.1
Psychiatry	100	73.6	Sadness	65	80.8	Madness	55	80.3
Madness	68	82.1	Anguish	48	85.8	Anguish	44	84.2
Psychosis	36	90.5	Psychiatrist	33	90.2	Psychiatry	30	89.2
Anguish	22	94.2	Dementia	20	94.1	Psychosis	16	94.2
Sadness	10	97.3	Psychiatry	8	97.6	Sadness	7	97.5

Figure 1

Semantic network of mental illness of medical students



Defining words	Semantic weight	Semantic distance
Depression	2370	0
Anxiety	1296	45.32
Schizophrenia	1024	56.79
Psychiatrist	868	63.38
Medicines	672	71.65
Anguish	460	80.59
Madness	344	85.49
Psychiatry	258	89.11
Sadness	138	94.18
Psychosis	59	97.51

Figure 2

Semantic network of mental illness by sex