Psychopathy traits and their association with depression, anxiety and sociodemographic factors in Peruvian medical students

Rasgos psicopáticos y su asociación con depresión, ansiedad y factores sociodemográficos en estudiantes de medicina peruanos

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Abstract

Introduction: Psychopathic traits harm the professional development and interpersonal relations of the general population, including healthcare professionals. This can be seen not only in already licensed physicians, but it may also be evidenced since their formative years as medical students. **Objective:** To evaluate the presence of psychopathic traits in a sample of Peruvian medical students and determining whether there is an association between sociodemographic and mental health (depression and anxiety) characteristics on the levels of psychopathic traits. **Methods:** A cross-sectional study was conducted on 497 students of a Peruvian medical school. Through online questionnaires, the following instruments were self-administered: Levenson Self-Report Psychopathy Scale (LSRP), Patient Health Questionnaire-9 (PHQ-9), and Generalized Anxiety Disorder-7 (GAD-7). **Results:** 19.7% of the participants were in the psychopathic group. The variables associated with a higher frequency of belonging to the psychopathic group were male sex (aPR = 2.10, 95% CI: 1.58-2.79, p < 0.05), having clinically relevant depressive (aPR = 2.05, 95% CI: 1.41-2.96, p < 0.05) and anxious symptoms (aPR = 1.46, 95% CI: 1.01-2.09, p < 0.05). **Conclusions:** Medical students of the sample studied show a high prevalence of psychopathy traits. The variables associated with a higher frequency of belonging to the psychopathic group were male sex, having clinically relevant depressive symptoms, and anxiety symptoms. More involvement on behalf of the medical school is necessary as to the identification of the psychopathic traits in medical students.

Keywords: Psychopathic Personality; Depression; Anxiety; Students, Medical; Mental Health; Education, Medical; Peru (source: MeSH NLM)

Resumen

Introducción: Los rasgos psicopáticos perjudican el desarrollo profesional y las relaciones interpersonales de la población general, incluidos los profesionales de la salud. Esto se puede ver no solo en médicos ya graduados, sino que también se puede evidenciar desde sus años formativos como estudiantes de medicina. **Objetivo:** Evaluar la presencia de rasgos psicopáticos en una muestra de estudiantes de medicina peruanos y determinar si existe asociación entre características sociodemográficas y de salud mental (depresión y ansiedad) sobre los niveles de rasgos psicopáticos. **Métodos:** Se realizó un estudio transversal en 497 estudiantes de una facultad de medicina peruana. A través de cuestionarios en línea, se autoadministraron los siguientes instrumentos: Escala de Psicopatía de Autoinforme de Levenson (LSRP), Cuestionario de Salud del Paciente-9 (PHQ-9) y Trastorno de Ansiedad Generalizada-7 (GAD-7). **Resultados:** El 19,7% de los participantes pertenecían al grupo de rasgos psicopáticos. Las variables asociadas a una mayor frecuencia de pertenecer al grupo psicopático fueron el sexo masculino (RPa = 2,10, IC 95%: 1,58-2,79, p < 0,05), tener síntomas depresivos (RPa = 2,05, IC 95%: 1,41-2,96, p < 0,05) y ansiosos (RPa = 1,46, IC 95%: 1,01-2,09, p < 0,05) clínicamente relevantes. **Conclusiones:** Los estudiantes de medicina de la muestra estudiada presentan una alta prevalencia de rasgos psicopáticos. Las variables asociadas a una mayor frecuencia de pertenecer al grupo psicopático fueron el sexo masculino, tener síntomas depresivos y ansiosos clínicamente relevantes. Es necesaria una mayor participación por parte de las facultades de medicina en cuanto a la identificación de los rasgos psicopáticos en sus estudiantes.

Palabras clave: Trastorno de Personalidad Antisocial; Depresión; Ansiedad; Estudiantes de Medicina; Salud Mental; Educación Médica; Perú (fuente: DeCS BIREME)

INTRODUCTION

The characteristics of psychopathy as a personality disorder include the presence of antisocial behavior, lack of empathy, a tendency to manipulate others, lack of guilt and remorse, and a tendency toimpulsiveness which leads to premeditated and violent acts [1]. It is estimated that around 1 to 2% of female individuals worldwide have psychopathic traits, while 2 to 4% of male individuals worldwide have traits[2]. In Peru, socioeconomic conditions combined with societal problems such as violence, corruption, and delinquency, have been linked to the presence of psychopathic traits and their display [3].

Psychopathy in psychiatry is approached from two different outlooks. Some authors consider that psychopathy leads to maladapted individuals, with a tendency to criminal behavior [4]. Other authors, however, consider psychopathy as a combination of complex aspects of an individual's personality, with adaptive and maladaptive behaviors playing a role in its manifestation [5]. Psychopathic individuals are described as possessing excessive confidence, with high charisma, a lack of guilt, and a tendency towards dishonesty [6]. These traits may be recognized as adaptations that give said individuals an advantage over stressful or dangerous situations, as they may react in a calmer and contained manner [7]. As such, these "positive traits" help the psychopathic individual in highly competitive activities, conferring them a degree of versatility that, whilst it has a strong tendency to criminal activity, it also can lead them towards prestigious positions in society, which include the medical field [8].

Psychopathic traits harm the professional development and interpersonal relations of the general population, including healthcare professionals. This can be seen not only in already licensed physicians, but it may also be evidenced since their formative years as medical students [9]. Psychopathic traits are more prevalent in surgeons, who previously have been found to display a more fearless, short-term orientated, and calculated train of thought, and reduced sensitivity, while having a high degree of self- control regarding emotions, both their own and of others. This stands in contrast to internal medicine physicians, who have been ascertained to be more empathetic and warmer towards others and to be more long-term orientated [10]. There is little information regarding medical students, although previous studies have shown an association between academic success and psychopathic traits. Certain traits have positive outcomes on the individual, as they provide resilience to stress and contribute towards better handling of complex problems involving people management [8]. However, others have found that psychopathic traits can be risk factors towards dropping out of the medical career [11].

Taking into consideration that research on psychopathy is scarce, especially when involving medical students, we propose the following study, which aims to evaluate the presence of psychopathic traits in students and the factors associated with it.

METHODS

Study design

This is a cross-sectional study. The participants were enrolled during the last two weeks of november 2020, at the end of the first wave of the COVID-19 pandemic.

Context

The present study was carried out in "Facultad de Medicina Humana – Universidad San Martín de Porres", a private medical school founded on July 6th, 1983, which is in La Molina, a high-income district of Lima, Peru [12]. Currently, it has an enrollment of over two thousand medical students, mostly from both middle-class and high-class families, from across the country. The faculty distributes its seven-year undergraduate study curriculum in two main parts: The first part is pre-clinical studies which take three years to complete, during which the students prepare before being sent to hospitals, and do not actively enter in contact with patients. The second part is clinical-surgical studies, which occur in the following four years, and involves active participation and development of the skills learned during their pre-clinical studies and medical rounds, dealing with patients and basic medical procedures. Upon completion of the study curriculum, the medical students are formally recognized as physicians.

Participants

We invited 1824 students from all years of study. The information regarding how many students were taking classes during the deployment of the survey was given by the faculty's administrative area. The students were recruited via an invitation sent to their institutional e-mail address, and a recruitment campaign through social media groups comprised of students, which are subdivided according to the academic year of study and are monitored by faculty staff.

Because the study was conducted considering all students, it was not necessary to calculate the sample size. Of the 1824 prospective participants, we had a total of 497 participants (response rate of 27.3%), after withdrawing those students that declined to participate further (n=14) and eliminating any duplicate responses (n=29), we were left with 497 participants.

Instruments

We employed a four-stage self-administered online questionnaire through Google Forms. The firststage was a survey about the sociodemographic characteristics of the participants. The second, third, and fourth stages, respectively were the Levenson Self-Report Psychopathy Scale, Patient Health Questionnaire-9 (PHQ-9), and Generalized Anxiety Disorder-7 (GAD-7).

Levenson Self-Report Psychopathy Scale (LSRP)

LSRP is a self-administered test that allows the evaluation of psychopathic traits in non- institutionalized adults. The scale includes 26 items graded on a four-point Likert scale (*strongly disagree to strongly agree)*. It provides a total score and two derived dimensions for the clinical subtypes of psychopathy [4]. The first derived score refers to the cognitive component of personality, which translates into primary psychopathy, and it is assessed by the first 16 items. The second derived score refers to the behavioral component of personality, which translates into secondary psychopathy, and it is assessed by the last ten items of the test. The scores are reflected in three groups: non-psychopathic (0-48), mixed (49- 57), and psychopathic

(58-104) [13]. In this research, the spanish version of the LSRP was used, which has been shown to have adequate psychometric properties in a sample of participants from Spain [14].

Additionally, the RLRP has also shown adequate psychometric properties in the general population of Mexico [15].

Patient Health Questionnaire-9 (PHQ-9)

PHQ-9 is a self-administered test, both reliable and validated, comprised of 9 items that are directly related to the severity of symptoms encompassed in depressive disorder during the two weeks before the self-administration of the test [16]. Each item is punctuated through a Likert scale that goes from 0 (zero days) to 3 (almost every day). The scores are reflected in five categories of ascending severity of the depressive disorder: none (0-4), mild (5-9), moderate (10-14), moderately severe (15-19), and severe (20- 27). A score of ≥10 has been recommended as the cut-off score for detecting clinically relevant major depressive disorders [17]. Furthermore, PHQ-9 has been validated in Peru [18].

Generalized Anxiety Disorder-7 (GAD-7)

GAD-7 is a self-administered test for assessing the severity of anxiety disorders in a clinical setting. Being both effective and validated in several languages, it is one of the most used scales in psychiatric research [19]. It is comprised of 9 items, which are directly related to the symptoms encompassed in anxiety during the two weeks before the self-administration of the test. Scores for all 7 items range from 0 (not at all) and 3 (nearly every day). The total scores are reflected in four categories of ascending severity of the anxious disorder: none (0-4), mild (5-9), moderate (10-14), and severe (15-21) [20]. A score of ≥10 has been recommended as the cut-off score for indicating clinically relevant anxiety [20]. This scale has been translated into spanish and validated in Peru [21].

Further variables

Besides, information regarding the following variables was collected: sex, age, profess religion, year of study, presence of a model for treating patients, medical specialty preferences (person-oriented – specialties that involve dealing directly with conscious patients most of the time, such as internal medicineand pediatrics; or technique-oriented – specialties that involve working with equipment instead of actively dealing with patients, or that do involve dealing with patients, but they are unconscious most of the time, such as radiology or surgery), grade point average, precedent psychiatric diagnosis, and area of study (pre-clinical or clinical-surgical).

Statistical analyses

A descriptive analysis of the participants was carried out using frequencies and percentages. Cohort-points from each of the scales were used to determine levels of depressive symptoms (none, mild, moderate, moderate-severe, and severe), anxious symptoms (none, mild, moderate, and severe), and psychopathic symptoms (non-psychopathic, mixed, and psychopathic).

To evaluate the factors associated to psychopathic traits we applied a generalized linear model with robust variance, assuming a Poisson Distribution with log-link functions. "Non-psychopathic" was used as the basal category, and it was compared against "mixed" and "psychopathic". Possible confounding factors included in the adjusted model were sex, age group, profess religion, if the student has a role model for treating patients, specialty, precedent psychiatric diagnosis, area of study, depressive symptoms (clinically irrelevant: none-mild vs. clinically relevant: moderate to severe), and anxious symptoms (clinically irrelevant: none-mild vs. clinically relevant: moderate to severe). Prevalence ratio (PR) and adjusted prevalence ratio (aPR) were used as a measure of association.

Ethical aspects

The research was carried out with the authorization of the "Comité de Ética" of the "Facultad de Medicina Humana – Universidad de San Martín de Porres" (approval number 837-2020-CIEI-FMH-USMP). The participants' identity was not linked to their results, and as such, anonymity was assured. A waiver was provided for informed consent to participate in the study, and it included a clause of voluntary removal in case a participant did not wish to collaborate any further with the study.

RESULTS

Description of participants and prevalence

67.8% were female, with an average age of 20.86 ± 3.02 years, and belonged to the clinical-surgicalarea of study (52.5%). 55.1% reported being interested in a person-oriented specialty, such as internal medicine or psychiatry, whilst 44.9% were more inclined towards a technique-centered specialty, such as radiology or surgery. The majority did not report a prior psychiatric diagnosis (87.5%). Finally, 62.2% stated having a role model that influenced their relationship with their patients (Table 1).

52.9% of the participants were within the psychopathic spectrum: 33.2% of mixed group and full psychopathic group (19.7%). In addition, we estimated that 76.5% of the participants presented some degree of depressive symptoms, and 67.4% presented some degree of anxious symptoms. Regarding the clinically relevant symptoms (moderate-severe), 40.4% were depressive and 29% anxious (Table 1).

Factors associated with psychopathic symptoms

In the regression analysis, the variables associated with a higher frequency of belonging to the psychopathic group were male sex (aPR = 2.10, 95% CI: 1.58-2.79, $p < 0.05$), having clinically relevant symptoms of depression (aPR = 2.05, 95% CI: 1.41- 2.96, $p < 0.05$) and anxiety (aPR = 1.46, 95% CI: 1.01- 2.09, $p < 0.05$) (Table 2).

DISCUSSION

This study determined a high prevalence of psychopathic traits in medical students (19.7%). This result is similar to what was reported in a previous study conducted in another peruvian medical school, where 19% of the students surveyed had a positive result on a locally adapted version of the Dissocial Behavior Scale (ECODI-27), aimed to study antisocial and dissocial behavior [22]. In another study conducted in Colombia, 20.1% of antisocial personality traits have been reported in health sciences students [23]. This high prevalence of psychopathic traits may be explained by the population selected for the study. Medicine is regarded as a highly demanding field, and both medical students and physicians are expected to be able to control and

Table 1. Sociodemographic characteristics and prevalence of psychopathic, depressive, and anxious symptoms (n = 497)

Variable	Frequency	Percentage
Sex		
Male	160	32.2
Female	337	67.8
Age group (years)		
< 18	58	11.7
≥ 18	439	88.3
Profess a religion		
No	193	38.8
Yes	304	61.2
Year of study		
First	137	27.6
Second	48	9.7
Third	51	10.3
Fourth	101	20.3
Fifth	131	26.4
Sixth	18	3.6
Seventh	11	2.2
Do you have a role model for treating patients?		
No	188	37.8
Yes	309	62.2
Medical specialty preference		
Technique-oriented	223	44.9
Person-oriented	274	55.1
Grade point average		
11.0 to 13.9	92	18.5
14.0 to 16.9	243	48.9
17.0 to more	39	7.9
Missing	123	24.8
Precedent psychiatric diagnosis		
No	435	87.5
Yes	62	12.5
Area of study		
Pre-clinical	236	47.5
Clinical-surgical	261	52.5
Depressive symptoms		
Clinically relevant	296	59.6
Clinically not relevant	201	40.4
Anxious symptoms		
Clinically relevant	353	71.0
Clinically not relevant	144	29.0
Psychopathic traits		
Non-psychopathic	234	47.1
Mixed	165	33.2
Psychopathic	98	19.7

manage the emotions of their patients, establish and direct both long-term and short-term strategies, and mix both level-headedness alongside fearlessness when confronting highly stressful situations that may push other individuals over the edge [24]. These traitsare associated with good academic and labor performance and could be considered adaptive personality traits [7]. However, these very traits are also found in antisocial behavior, which alongside recklessness andlack of empathy, constitute the personality disorder known as psychopathy [25].

Furthermore, our study found moderate to severe anxiety symptoms in 29% of the students surveyed. Also, moderate to severe depressive symptoms were found in 40.4% of the participants, revealing that these symptoms were highly prevalent in the medical students, which add up to the negative impact that psychopathy has on their academic, professional, and personal wellbeing [26]. University students are part of the population vulnerable to developing mental health problems in the context of the COVID-19 for various reasons, one of which is uncertainty about the future and the potential negative effect on academic progress [27]. Furthermore, medical students are known to have higher levels of anxiety, depression, and stress compared to students in other university pathways [28].

Previous studies have ascertained that psychopathic trait are more prevalent in males, like our findings in our study. It must be noted that, according to the literature, psychopathy in males is displayed by aggressive conduct and substance abuse, which makes it more evident to identify psychopathy in females, which displays it more subtly, via lying and harmful gossiping [29]. The previous literature, however,derives mostly from studies in prison inmates [30]. Undergraduate students, particularly medical students are underrepresented. Thus, more research is warranted to determine if there are other manifestations of underlying psychopathy in this group, such as internet abuse, cramming, procrastinating, plagiarizing, or cheating in exams, for example [31]. The significant associations found between depressive and anxious symptoms and psychopathy underlie the

need for psychologic and/or psychiatric intervention in the students that require it, and overall, more involvement on behalf of the medical schools regarding their student's mental health, even more so considering the aftermath of the COVID-19 pandemic [32].

Studies have shown that personality traits do influence decision-making when selecting a medical specialty after concluding undergraduate studies at medical school, as well as professional performance [33]. These shape the professional and personal growth of the medical student throughout his years in medical school and are subject to negative change due to the inherent exigencies of the medical career; empathy particularly, tends to diminish over undergraduate studies [34]. In medical students with psychopathic traits, it is a veritable risk that they become desensitized too quickly, especially when considering the possibility of developing depressive and/or anxious symptoms, and thus monitoring is warranted [35]. Additionally, a previous study has found a significant correlation between medical specialty and dissocial, impulsive, and borderline personality disorder separately [36].

While not all aspects of psychopathy are inherently detrimental to the sufferer, they can prove to be harmful to others, particularly when it comes to the recklessness and lack of remorse associated with the condition, adding up to the empathetic impairment also associated with the condition, all in all, making the physician prone to moral judgments against the better interests of the patient, but fully justified to the professional as "necessary risk" [37]. Therefore, because it is important to foster a healthy patient-clinician relationship, it is paramount that psychopathy is detected early during undergraduate studies to initiate treatment to mitigate the pernicious effects it will provoke if unchecked [38].

Psychopathy is known for being difficult to treat and being underdiagnosed, which leads to patientsbeing entrenched on the negative traits of the condition for decades while not fostering the "positive" ones. Early diagnosis and treatment translate into preventing the fostering of egocentrism and aggressive behavior while emphasizing decision making and empathy, which helps mitigate the lifelong impact that psychopathy traits will have on the medical student [39]. Finally, it also must be noted that early diagnosis will help the medical school better exploit the "positive" traits that psychopathy does offer to the medical student displaying these traits, by helping him find a medical specialty better suited for his talents and interests in concordance to his personality, but also one that may be sorely required by the community future physician is going to serve in [40].

This study must be understood in the context of its methodological limitations. Since the study is cross-sectional, we were neither able to evaluate a causal relationship nor how the psychopathic traits evolve. Since we only evaluate students from one medical school, we cannot generalize the results to all medical students from other medical schools or other students from other health careers. Also, an additional bias must be considered relating to an erroneous classification of participants, as the validated self- administered tests do not substitute an individualized evaluation performed by a mental health specialist. Finally, the LSRP is not validated in Peru.

In conclusion, the results of this study indicate a high prevalence of psychopathic traits in students from a medical school in Lima, Peru. The variables associated with a higher frequency of belonging to the psychopathic group were male

Table 2. Factors associated with psychopathic traits following adjustment for sociodemographic variables (n=497)

Variable	Non-psychopathic vs Mixed		Non-psychopathic vs Psychopathic	
	Crude PR	Adjusted PR [a]	Crude PR	Adjusted PR [a]
Sex				
Female	1	1	1	1
Male	1.20 [0.87-1.66]	1.37 [0.98-1.92]	1.81 [1.37-2.40]	2.10 [1.58-2.79]
Age group (years)				
< 18	1	1	1	1
≥ 18	0.81 [0.51-1.27]	0.90 [0.55-1.49]	0.64 [0.44-0.94]	0.81 [0.53-1.23]
Profess religion				
No	1	1	1	1
Yes	1.02 [0.75-1.40]	1.07 [0.77-1.49]	0.91 [0.68-1.20]	1.01 [0.76-1.35]
Do you have a model for treating patients?				
No	1	1	1	1
Yes	0.96 [0.70-1.31]	1.04 [0.74-1.47]	0.82 [0.61-1.08]	0.99 [0.73-1.34]
Medical specialty preference				
Technique-oriented	1	1	1	1
Person-oriented	0.91 [0.67-1.24]	0.94 [0.69-1.28]	0.83 [0.63-1.09]	0.99 [0.74-1.33]
Precedent psychiatric diagnosis				
No	1	1	1	1
Yes	1.18 [0.74-1.86]	1.07 [0.66-1.74]	1.60 [1.11-2.29]	1.37 [0.94-1.99]
Area of study				
Pre-clinical	1	1	1	1
Clinical-surgical	1.27 [0.94-1.73]	1.24 [0.88-1.74]	1.65 [1.24-2.19]	1.24 [0.89-1.71]
Depressive symptoms				
Clinically irrelevant	1	1	1	1
Clinically relevant	1.55 [1.14-2.10]	1.66 [1.14-2.40]	2.51 [1.88-3.33]	2.05 [1.41-2.96]
Anxious symptoms				
Clinically irrelevant	1	1	1	1
Clinically relevant	1.26 [0.90-1.76]	0.92 [0.61-1.41]	2.33 [1.76-3.08]	1.46 [1.01-2.09]

PR: Prevalence Ratio. [a] Adjusted model by sex, age group, profess religion, if have a role model, specialty, precedent psychiatric diagnosis, area of study, depressive symptoms, and anxious symptoms.

sex, having clinically relevant depressive symptoms, and anxiety symptoms. More involvement on behalf of the medical school is necessary as to the identification of the psychopathic traits in medical students, which would severely hinder their development as individuals and professionals, in detriment to their patients, if left untreated.

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