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Clinical medical practice and stigma towards patients with substance use disorder in an Italian sample of healthcare workers

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Abstract

Introduction. People with substance use disorder (SUD) face challenges like stigma and discrimination, impacting their healthcare experiences.

Aim. This study aims to: (i) assess physicians' clinical practices and stigma toward SUD patients among healthcare personnel and (ii) explore the relationship among stigma, psychological well-being, and burnout.

Methods. A survey covering sociodemographic data, physicians' clinical practices, stigmatizing attitudes, psychological well-being, and burnout was completed by 1,796 employees of the Veneto's Local Health Units (Italy).

Results. Healthcare professionals reported increased stigma towards SUDs (*p*-values<0.05). Stigma consistently correlated with variables such as sex, profession, department, and levels of burnout (*p*-values<0.05). Notably, high burnout levels were associated with increased stigma. Staff in addiction departments displayed lower stigma levels compared to other departments. No significant differences were found in physicians' clinical practices.

Conclusions. Targeted training for healthcare professionals is crucial to reduce stigma, enhance attitudes toward SUDs, and broaden overall knowledge of the condition.

Key words

- substance-related disorders
- social stigma
- health personnel
- practice patterns
- physicians'

INTRODUCTION

People with substance use disorder (SUD) commonly face several negative consequences ranging from health problems to economic and social issues such as stigma and discrimination. According to the American Psychological Association [1], stigma is defined as "the negative social attitude attached to a characteristic of an individual that may be regarded as a mental, physical, or social deficiency. A stigma implies social disapproval and can lead unfairly to discrimination against and exclusion of the individual". Stigma typically occurs in relation to personal characteristics and social constructs, such as ethnicity and sexual orientation, but can also occur in relation to dimensions concerning the individual's health status, particularly mental status [2]. In this perspective, substance use disorders are severely stigmatized compared to other mental conditions [3, 4].

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Health professionals play a key role in the diagnosis and treatment of SUDs. Consequently, the presence of stigma in the healthcare context can have detrimental effects on SUD patients [5]. Previous literature has found that stigmatizing attitudes among healthcare professional toward SUD patients can lead to several treatment complications such as inadequate staff connection, unsatisfactory therapeutic alliance, premature treatment interruption, difficulty in accessing therapies, up to treatment avoidance [5-7]. Another frequent complication is the so-called "diagnostic overshadowing" which refers to the tendency of clinicians to attribute signs and symptoms of physical illness to the mental illness or addiction disorder [8]. This type of discrimination can lead to underdiagnosing and not properly treating physical conditions [9]. According to a recent systematic review [5], healthcare providers generally have a negative attitude toward SUD patients, and in particular, perceive these patients as more violent, manipulative, and with low motivation to treatment. These negative attitudes toward SUD patients can have a huge impact on treatment outcomes, such as receiving suboptimal care with respect to other patients [10].

Given the substantial negative effects that a stigmatizing attitude of healthcare providers can have on SUD patients, it is of the utmost importance to measure the presence and the level of stigma among health professionals towards SUD patients. Previous literature on this phenomenon has been mainly conducted in English-speaking countries [5], with only limited studies being conducted in Europe and including Italian healthcare workers. Gilchrist and colleagues [11] conducted a multi-centre study investigating the availability of different healthcare professionals among eight European countries (n=866; Italy n=70) to work with different patient groups, including SUD patients. According to the results, the willingness to work with either alcohol or drug users was significantly lower compared to patients with other physical or mental conditions across all countries [11]. Nevertheless, this study did not investigate other dimensions of stigma and included a limited number of Italian health professionals. Another study [12] examined the perception of stigma towards drug users in a sample of Italian (n=200) and Belgian students and health workers, highlighting higher levels of perceived stigma among the Italian participants compared to the Belgian ones. Still, this study was not precisely focusing on a population of healthcare professionals and did not analyse other possible stigmatizing attitudes, such as clinical medical practice.

Research in this field is still in its infancy, especially when considering the Italian context, which makes it essential to expand the knowledge about the presence of stigma in healthcare settings and the possible factors that can be related to this construct. Accordingly, the present study aims to evaluate medical doctors' clinical practice patterns and the stigma levels towards SUD patients of healthcare personnel of the Local Health Units of the Veneto Region, Italy. Furthermore, the study aims at individuating factors related to stigma levels by exploring the relationship between stigma, psychological well-being, and burnout.

MATERIALS AND METHODS

Procedure and material

For the present study, an ad hoc online and anonymous survey was developed and distributed through a link to the employees of the Local Health Units (*Unità Locale Socio Sanitaria, ULSS*) of the Veneto Region, Italy. No personal data was collected via the questionnaire.

The survey is composed of demographic questions (i.e., age, sex, marital status), questions concerning employment characteristics (i.e., profession, specialisation, department/service, setting), questions concerning daily clinical practice administered only to medical doctors, and specific questions concerning the willingness to work with people with SUDs and beliefs about treatment in people with SUDs. In addition, within the survey, there are questions taken from four standardised questionnaires adapted to the present context [13]: Depression Stigma Scale subscale of personal stigma [14], Social Distance Scale [15], World Health Organisation-Five Well-Being Index (WHO-5) [16], and Maslach Burnout Inventory (MBI) [17]. Questions regarding clinical practice (block 1) refer to 4 different situations: people with alcohol use disorder (i.e., AUD), people without AUD, people with cocaine, amphetamine, or opioid use disorder (i.e., DUD) and people without DUD. Questions regarding the willingness to work and beliefs about treatment (block 2) refer to people with AUD, people with DUD, people with other psychiatric disorders, and people with internal diseases (i.e., diseases that pertain to the internal medicine area). The personal stigma scale and the social distance scale refer to people with AUD and people with DUD. *Table 1* describes in detail the scales and the ad hoc questions.

Participants

Answers to the questionnaire were collected from 1,832 health workers of the ULSS of the Veneto Region. Of these, 36 participants were excluded due to missing data (>80%). The final sample, on which the analyses were conducted, consisted of 1,796 subjects.

Statistical analysis

The sample was first inspected and missing data were imputed using the predictive mean matching method [18, 19].

Subsequently, descriptive analyses were performed, reporting the frequency for categorical variables and the mean and standard deviation for continuous variables. Paired-sample t-tests were conducted to assess how medical doctors scored on questions about medical practice toward those SUDs (i.e., AUD and DUD) compared to those without these disorders. We also tested if there were differences in how willing participants were to work with patients with SUDs and their beliefs about treatment for patients compared to people with other disorders like psychiatric conditions or internal diseases. Paired-sample t-tests were, also, conducted to assess whether there were differences in total scores on the personal stigma and social distance scales towards persons with AUD and persons with DUD. We used linear regression models to predict total scores on the stigma and social distance scales towards both per-

Table 1
Description of the questions and scales of the online survey administered to health personnel

Questionnaires	Description
Clinical medical practice (block 1)	32 questions addressed to medical personnel only. *"How often would you prescribe the following exams or interventions in persons (**with** or **without**) an **alcohol use disorder**?"* *"How often would you prescribe the following exams or interventions in persons (**with** or **without**) a **cocaine, amphetamine, or opioid use disorder**?"* • *faced with acute onset chest pain of 7/10 intensity an echocardiogram or cardiac ultrasound or troponin or D-Dimer;* • *for abdominal pain of 7/10 intensity of acute onset, a blood count, ultrasound or X-ray;* • *for a headache of 7/10 intensity of acute onset, a brain scan;* • *in the case of type II diabetes mellitus, request HbA1c or prescribe metformin;* • *in the case of type II diabetes mellitus or hypercholesterolaemia, physical activity;* • *in the case of type II diabetes mellitus or hypercholesterolaemia, diet;* • *in women, when indicated by age, a screening mammography for breast cancer;* • *when indicated by age, a screening PAP test for cervical cancer in women or PSA in men.* Answers range from 1 ("never") to 7 ("always").
Willingness to work and beliefs about treatment in people with substance use disorders and other pathologies (block 2)	13 questions: • *"I would work with people with (**alcohol use disorder** / **cocaine, amphetamine, or opioid use disorder** / **psychiatric disorders**)" (3 questions)*; • *"I would work in an (**addiction** / **mental health**) service or community" (2 questions)*; • *"People with (**alcohol use disorder** / **cocaine, amphetamines, or opioids use disorder** / **psychiatric disorders** / **internal diseases**) are adherent to treatment" (4 questions)*; • *"Motivation to treatment may change after motivational intervention in people with (**alcohol use disorder** / **cocaine, amphetamines, or opioids use disorder** / **psychiatric disorders** / **internal diseases**)" (4 questions).* Responses ranged from 5 ("completely disagree") to 1 ("completely agree"). Higher scores represent a higher stigma with respect to working with people with a certain problem and with respect to the belief that people with a certain problem adhere to treatment and that it works. 2 questions: • *"Do you think that intervention with the territorial social network can help in the treatment of (**alcohol use disorder** / **cocaine, amphetamines, or opioids use disorder**)?"* Answers range from 1 ("not at all") to 5 (" fundamental").
Depression Stigma Scale subscale personal stigma (DSS) [14]	The DSS is an 18-item scale to measure stigma. It consists of two subscales of 9 items each: personal stigma (i.e., reflects the participant's personal attitudes towards depression) and perceived stigma (i.e., reflects the participant's beliefs about the attitudes of others). For the present study, only the personal stigma subscale consisting of 9 items was used, adapting it to the specific context [13scales have not been developed and validated for assessing substance-use stigma. Given its importance for targeting interventions, the aim of the present study was to validate a Chinese substance-use stigma measure including three dimensions of substance-* use-disorder-related stigma (personal stigma, perceived stigma and social distance]. The subjects were asked to imagine two situations: • *"Anthony is a person with **alcohol use disorder**. The next questions will be about your personal predisposition towards Anthony"*; • *"Jack is a person with a **cocaine, amphetamine, or opioid use disorder**. The next questions will be about your personal predisposition towards Jack".* And to answer the following questions for each of the two situations: *1. people with this problem could get out of it if they wanted to;* *2. this kind of problem is a sign of personal weakness;* *3. this kind of problem is not a real medical illness;* *4. people with this kind of problem are dangerous;* *5. it is better to avoid people with this kind of problem so as not to develop the same problem;* *6. a problem like this makes people unpredictable;* *7. if I had this kind of problem I would not tell anyone;* *8. I would not hire anyone that I know has this kind of problem;* *9. I would not vote for a politician I know has this kind of problem.* For each question the subject must indicate the degree of agreement from 1 ("completely disagree") to 5 ("completely agree"). Total scores range from 9 to 45. Higher scores represent a higher personal stigma.
Social Distance Scale (SDS) [15]	The SDS is a 7-item scale that measures the social distance the respondent wants to maintain in relation to people with a particular condition. For the present study, the questionnaire was adapted for the specific context [13scales have not been developed and validated for assessing substance-use stigma. Given its importance for targeting interventions, the aim of the present study was to validate a Chinese substance-use stigma measure including three dimensions of substance-* use-disorder-related stigma (personal stigma, perceived stigma and social distance], including 5 items investigating the subject's willingness to be involved in 5 social situations with regard to ***alcohol use disorder*** and ***cocaine, amphetamine, or opioid use disorder***: *1) having a person with this problem as a neighbour, 2) spending an evening socialising 3) having a person with this type of problem as a friend, 4) working closely with a person with this problem 5) having some family member marry a person with this type of problem.* For each question, the subject indicates the degree of availability from 4 ("definitely not available"') to 1 ("definitely available"). Total scores range from 5 to 20. Higher scores represent a higher social distance.

Continues

Table 1
Continued

Questionnaires	Description
The World Health Organisation- Five Well-Being Index (WHO-5) [16]	WHO questionnaire measuring the level of psychological well-being. It consists of five items that refer to positive mood (feeling good, relaxed), vitality (feeling active, awake, and rested) and general interests (being interested in new things). The subject must respond to each item by choosing from six options on a Likert scale ranging from 0 ("never") to 5 ("always"). The raw total score ranges from 0 to 25, where 0 represents the worst possible quality of life and 25 represents the best possible quality of life. Higher scores correspond to a better level of well-being.
Maslach Burnout Inventory (MBI) [17]	The MBI is designed to assess the severity of the burnout syndrome. It consists of 22 items, which form 3 subscales and identifies a burnout condition with • high total scores on the subscales of emotional exhaustion (EE - 9 items) and depersonalisation (DP - 5 items); • and with low total scores on the subscale of personal accomplishment (PA - 8 items). The items are written in the form of statements about personal feelings or attitudes and subjects must respond according to the frequency with which they experience them following a 7-point Likert scale from 0 ("never") to 6 ("every day").

sons with AUD and persons with DUD. Results with p-values<0.05 are considered significant. All analyses were performed using the statistical software R [20] and Jamovi [21].

RESULTS

Sample characteristics

The average age of the sample is 47.3 years with a standard deviation of 10.4 years, the age range goes from a minimum of 19 years to a maximum of 68. The sample is mainly composed of female subjects (n=1,418; 79%) and married subjects (n=1,086; 60.5%). Most of the sample comprises nurses/health professionals (n=950; 52.9%) and health care assistants (n=275; 15.3%), whereas medical doctors account for 10.2% of the sample (n=183). Around 13% of the subjects (n=233) works in emergency departments, 11.1% (n=200) in addiction departments, and 9.6% (n=172) in mental health departments. Finally, the majority of the sample works in the hospital setting (n=1,082; 60.2%) followed by the territorial/ ambulatory setting (n=694; 38.6%). *Table S1* (*available online as Supplementary Material*) shows in detail all the socio-demographic characteristics of the sample.

Subjects from all the ULSS of the Veneto Region participated in the survey. Specifically, ULSS2 and ULSS3 exhibited the highest response rates with 7.74% and 5.88% of their employees participating in the survey, respectively. Together, ULSS2 and ULSS3 comprised the 41% (n=736) and 25.3% (n=455) of the total survey participants. However, despite comprehensive ULSS participation, the response rates for individual units remained relatively low. *Table S2* (*available online as Supplementary Material*) provides a breakdown of participants per ULSS, along with their response rates, adjusted for the total number of employees within each ULSS.

Clinical medical practice (block 1)

Regarding the questions concerning clinical medical practice, medical personnel does not show a significant difference in prescribing examinations or visits to persons with AUD compared to persons without the disorder. On the other hand, there is a significant difference in prescribing a diet for DUD patients with diabetes or high cholesterol compared to non-DUD patients (p=0.014); specifically, doctors tend to prescribe the diet more often in persons without DUD compared to persons with the disorder. Clinical practice differs significantly when it comes to AUD patients compared to DUD patients. Physicians tend to prescribe exams for headache (p<0.001) more often to DUD patients, whereas they tend to prescribe more often interventions (i.e., physical activity: p<0.001, diet: p=0.013) to contrast diabetes and high cholesterol, and screening examinations (i.e., mammography: p<0.001, PAP/PSA test: p=0.005) for cancer prevention to people with AUD.

Willingness to work and beliefs about treatment (block 2)

Considering the questions of the second block of the survey there is a significant difference (p-values<0.001) in the healthcare personnel' willingness to work with SUD patients compared to psychiatric patients. Specifically, healthcare professionals are less willing to work with DUD patients than with other patients (i.e., with AUD or with psychiatric disorders). Health personnel also show greater reluctance (p<0.001) in working in an addiction service or community compared to working in a mental health service.

Regarding participants' beliefs about patients treatment adherence, there are significant differences (p-values<0.001) relating to the type of disorder. In more detail, health personnel believe that DUD patients are the least adherent to treatment, followed by AUD, and psychiatric patients.

About the statement that motivation can change as a result of motivational intervention, significant differences can be found when comparing people with different disorders (i.e., AUD *vs* DUD: p<0.001, AUD *vs* psychiatric disorders: p<0.001, internal diseases *vs* psychiatric disorders: p<0.001). This difference is not significant when comparing DUD and psychiatric patients. Specifically, health personnel believe that motivation is less likely to change after interventions in DUD or psychiatric patients, followed by AUD patients.

Finally, about the belief in the usefulness of the motivational intervention, healthcare professionals believe that this is more useful when it is directed at AUD patients than at DUD patients ($p<0.001$).

Personal stigma and social distance

Personal stigma refers to the personal attitudes towards people with a certain condition, whereas social distance represents the distance the respondent wants to maintain in relation to people with a certain condition. There are significant differences in scores on the personal stigma ($p<0.001$) and social distance ($p<0.001$) scales for AUD patients compared to DUD patients. In more detail, healthcare personnel report higher scores on the personal stigma and social distance scales when these are referred to people with DUD. *Table 2* presents the results of comparative analyses.

Regression analyses

We used linear regression models to identify which of the investigated variables were related to stigma scores (i.e., personal stigma and social distance scales) towards AUD and DUD patients.

Significant variables that are predictive of the scores on the personal stigma scale towards people with AUD are: the age of the healthcare personnel ($p=0.047$), psychological well-being as measured by WHO-5 ($p<0.001$), emotional exhaustion as measured by the MBI ($p=0.005$), sex ($p=0.049$), marital status ($p=0.032$), profession ($p<0.001$), and department ($p<0.001$). Considering the social distance scale, personal accomplishment as measured by the MBI ($p<0.001$), sex ($p=0.019$), profession ($p=0.003$), and department ($p=0.002$) were significant.

For the same analysis referring to personal stigma toward persons with DUD, we found that age ($p=0.008$), psychological well-being ($p<0.001$), emotional exhaustion ($p=0.004$), profession ($p<0.001$), and department ($p<0.001$) were significantly related to the scores on the personal stigma scale. For the social distance scale, personal accomplishment ($p=0.017$), sex ($p=0.049$), profession ($p<0.001$), and department ($p<0.001$) were significant.

In more detail, the personal stigma scores towards people with AUD are higher for health personnel of older age, with high levels of psychological well-being, and of emotional exhaustion. The personal stigma score is higher on average when considering the male sex, separated or divorced status, nurses or health professionals, health care workers, and administrative/ technical staff. Instead, professionals working in addiction departments are significantly associated to lower personal stigma scores on average. Personal stigma scores towards people with DUD are influenced in the same way as personal stigma scores towards persons with AUD except for the sex and marital status variables.

Social distance scores towards AUD and DUD patients are higher when burnout levels are high (i.e., low personal accomplishment). Social distance scores towards persons with AUD are higher on average in the female sex, nurses or health professionals, physicians, health care workers, and administrative/ technical staff. When these scores are referred to persons with DUD, there is not a significant association with administrative staff but with psychologists. Social distance scores are lower on average for professionals working in addiction departments. *Table 3* shows the four linear regression models in detail.

DISCUSSION

The present study aimed at analysing the habitual clinical practice of medical doctors of the Local Health Units of the Veneto Region in Italy, when confronted with people with SUD or with other diseases to highlight possible stigmatizing conducts that can have detrimental effects on patients and their treatment courses. In addition, this study aimed at evaluating stigma levels among all healthcare professionals and identifying the possible factors that can be related to stigma.

The first goal of the present study was to investigate prescription practice among medical doctors in order to spot possible clinical misconducts referrable to the "diagnostic overshadowing" which typically occurs in the context of mental illnesses [8, 22]. According to our results, medical doctors did not exhibit significantly different clinical conducts in prescribing examinations or visits to people with SUDs and people without these disorders; however, there is a significant tendency for the physicians to prescribe exams with a different frequency to people with AUD compared to people with DUD. People with DUD are prescribed more brain scans and blood exams, whereas people with AUD are prescribed more physical activity and diet interventions together with cancer screenings.

The second goal of the present study was to assess stigmatizing attitudes among healthcare providers. The results showed that healthcare professionals are less prone to work with people with DUD, compared to people with AUD or psychiatric disorders; they also prefer working in mental health services rather than in addiction services. This is in line with previous studies reporting the lower availability and willingness of healthcare providers to work with SUD patients compared to patients with other mental and physical disorders [5, 11]. In addition, healthcare professionals think that SUD patients are less adherent to treatment compared to psychiatric patients or patients with other pathologies. Furthermore, healthcare professionals think that motivation for treatment cannot change after a motivational intervention in people with SUD or psychiatric disorders, while this belief is less strong for AUD patients. Alongside, the personnel thinks that motivational interventions can be more useful when delivered to AUD patients rather than DUD patients. According to the literature, health professionals typically hold negative beliefs about treatment attitudes and outcomes among SUD patients [23]. When it comes to analysing the levels of personal stigma, reflecting the participant's attitudes towards SUDs, and the levels of social distance, referring to the distance the respondent wants to maintain in relation to people with SUDs, healthcare professionals reported significantly higher levels of both personal stigma and social distance towards DUD patients compared to AUD patients.

Table 2
Comparative analysis of clinical medical practice and stigma questions

	Mean	Mean	Student's t	*p*-value
Prescription frequency (n=183)	**DUD**	**Without DUD**		
Diet for type II diabetes/ hypercholesterolaemia	6.03	6.17	-2.474	0.014
	AUD	**DUD**		
Headache exams	5.35	5.62	-4.094	<0.001
Type II diabetes examinations	5.51	5.66	-1.931	0.055
Physical activity for type II diabetes/ hypercholesterolaemia	6.33	6.1	3.535	<0.001
Diet for type II diabetes/ hypercholesterolaemia	6.18	6.03	2.511	0.013
Mammography	6.36	6.21	3.445	<0.001
PAP/PSA test	6.34	6.22	2.821	0.005
Disagreement level (n=1,796)	**Addiction**	**Mental health**		
Working in service/ community	3.14	2.89	8.75	<0.001
Disagreement level (n=1,796)	**AUD**	**DUD**		
Working with people with	3.25	3.45	-12.5	<0.001
Adherence to treatment	3.39	3.59	-12.7	<0.001
Motivational intervention	2.22	2.55	-18.54	<0.001
	AUD	**Psychiatric disorders**		
Working with people with	3.25	2.96	10.4	<0.001
Adherence to treatment	3.39	3.04	15.3	<0.001
Motivational intervention	2.22	2.55	-14.79	<0.001
	DUD	**Psychiatric disorders**		
Working with people with	3.45	2.96	17.2	<0.001
Adherence to treatment	3.59	3.04	23.8	<0.001
Motivational intervention	2.55	2.55	0.00	1.000
	AUD	**Internal diseases**		
Adherence to treatment	3.39	2.51	30.8	<0.001
Motivational intervention	2.22	2.09	6.3	<0.001
	DUD	**Internal diseases**		
Adherence to treatment	3.59	2.51	35.9	<0.001
Motivational intervention	2.55	2.09	18.23	<0.001
	Psychiatric disorders	**Internal diseases**		
Adherence to treatment	3.04	2.51	21.5	<0.001
Motivational intervention	2.55	2.09	20.45	<0.001
Usefulness level (n=1,796)	**AUD**	**DUD**		
Usefulness of territorial social network intervention	3.52	3.43	9.66	<0.001
Scale scores (n=1,796)	**AUD**	**DUD**		
Personal stigma	24.7	26.2	-16.6	<0.001
Social distance	12.6	13.8	-24.4	<0.001

AUD: alcohol use disorder; DUD: drug use disorder (cocaine, amphetamine, or opioid); PSA: prostate specific antigen; n: number.

Overall, these results highlight more stigmatizing attitudes towards people with SUDs compared to people with other diseases, and in particular towards people that make use of drugs. Other authors reported similar results in different contexts [4, 24, 25], suggesting that individuals diagnosed with SUDs are among the mostly stigmatized patients both from the general public and the healthcare community.

The last goal of our study was to identify possible variables associated with stigma (i.e., personal stigma and social distance). According to the regression analyses, the variables more consistently associated with personal stigma towards SUDs were the age, the profession, the department, the levels of psychological well-being, and the levels of burnout dimension of emotional exhaustion. More specifically, personnel with older ages, with

Table 3
Linear regression models for personal stigma and social distance scales

	Estimate	SE	Student's *t*	*p*-value
Personal stigma – AUD				
Intercept	15.34078	2.4480	6.2666	<0.001
Age	0.02774	0.0139	1.9905	0.047
Psychological well-being (WHO-5)	0.13284	0.0303	4.3879	<0.001
Emotional exhaustion (MBI_EE)	0.05160	0.0182	2.8288	0.005
Depersonalization (MBI_D)	0.02768	0.0303	0.9126	0.362
Personal accomplishment (MBI_PA)	-0.00462	0.0204	-0.2257	0.821
Sex:				
Male – Female	0.64144	0.3252	1.9726	0.049
Marital status:				
Single – Married	-0.06987	0.3158	-0.2212	0.825
Separated, divorced – Married	0.89417	0.4178	2.1401	0.032
Profession:				
Social worker – Educator/ professional educator	0.28918	0.8126	0.3559	0.722
Nurse or health professional – Educator/ professional educator	2.11550	0.5936	3.5637	<0.001
Medical doctor – Educator/ professional educator	0.21510	0.6890	0.3122	0.755
Health care assistant – Educator/ professional educator	3.44254	0.6612	5.2065	<0.001
Psychologist – Educator/ professional educator	0.45474	0.7816	0.5818	0.561
Administrative/ technical staff – Educator/ professional educator	3.21586	0.7484	4.2969	<0.001
Department:				
Emergency – Addiction	2.84020	0.6056	4.6901	<0.001
Mental health – Addiction	1.53427	0.5719	2.6830	0.007
Other – Addiction	2.83585	0.4781	5.9313	<0.001
Setting:				
Missing – Nursing home	0.27649	2.6283	0.1052	0.916
Hospital – Nursing home	0.78073	2.2020	0.3546	0.723
Territorial/ ambulatory – Nursing home	0.14565	2.2147	0.0658	0.948
Social distance - AUD				
Intercept	11.24347	1.39955	8.0337	<0.001
Age	0.01552	0.00797	1.9471	0.052
Psychological well-being (WHO-5)	0.00230	0.01731	0.1330	0.894
Emotional exhaustion (MBI_EE)	0.01910	0.01043	1.8314	0.067
Depersonalization (MBI_D)	0.01647	0.01734	0.9496	0.342
Personal accomplishment (MBI_PA)	-0.04973	0.01169	-4.2543	<0.001
Sex:				
Male – Female	-0.43471	0.18591	-2.3383	0.019
Marital status:				
Single – Married	0.08087	0.18056	0.4479	0.654
Separated, divorced – Married	0.21575	0.23887	0.9032	0.367
Profession:				
Social worker – Educator/ professional educator	0.76802	0.46455	1.6532	0.098
Nurse or health professional – Educator/ professional educator	1.01749	0.33938	2.9981	0.003
Medical doctor – Educator/ professional educator	1.11762	0.39392	2.8372	0.005
Health care assistant – Educator/ professional educator	1.04813	0.37801	2.7727	0.006
Psychologist – Educator/ professional educator	0.65517	0.44683	1.4663	0.143
Administrative / technical staff – Educator/ professional educator	1.16216	0.42787	2.7161	0.007

Continues

Table 3
Continued

	Estimate	SE	Student's *t*	*p*-value
Department:				
Emergency – Addiction	1.08427	0.34621	3.1319	0.002
Mental health – Addiction	0.23964	0.32693	0.7330	0.464
Other – Addiction	0.54229	0.27334	1.9839	0.047
Setting:				
Missing – Nursing home	0.02976	1.50260	0.0198	0.984
Hospital – Nursing home	0.30145	1.25887	0.2395	0.811
Territorial/ambulatory – Nursing home	-0.03521	1.26616	-0.0278	0.978
Personal stigma - DUD				
Intercept	14.49541	2.6728	5.423	<0.001
Age	0.04037	0.0152	2.653	0.008
Psychological well-being (WHO-5)	0.14574	0.0331	4.409	<0.001
Emotional exhaustion (MBI_EE)	0.05703	0.0199	2.863	0.004
Depersonalization (MBI_D)	0.04655	0.0331	1.406	0.160
Personal accomplishment (MBI_PA)	-0.00718	0.0223	-0.321	0.748
Sex:				
Male – Female	0.36483	0.3550	1.028	0.304
Marital status:				
Single – Married	-0.06622	0.3448	-0.192	0.848
Separated, divorced – Married	0.74098	0.4562	1.624	0.104
Profession:				
Social worker – Educator/ professional educator	1.07270	0.8872	1.209	0.227
Nurse or health professional – Educator/ professional educator	2.30607	0.6481	3.558	<0.001
Medical doctor – Educator/ professional educator	0.76327	0.7523	1.015	0.310
Health care assistant – Educator/ professional educator	3.36710	0.7219	4.664	<0.001
Psychologist – Educator/ professional educator	1.28608	0.8533	1.507	0.132
Administrative / technical staff – Educator/ professional educator	3.25051	0.8171	3.978	<0.001
Department:				
Emergency – Addiction	3.80929	0.6612	5.761	<0.001
Mental health – Addiction	1.94748	0.6244	3.119	0.002
Other – Addiction	3.39874	0.5220	6.511	<0.001
Setting:				
Missing – Nursing home	0.96626	2.8696	0.337	0.736
Hospital – Nursing home	1.59075	2.4041	0.662	0.508
Territorial/ambulatory – Nursing home	0.63027	2.4180	0.261	0.794
Social distance - DUD				
Intercept	13.86342	1.54812	8.955	<0.001
Age	-0.01476	0.00881	-1.675	0.094
Psychological well-being (WHO-5)	-0.00235	0.01915	-0.123	0.902
Emotional exhaustion (MBI_EE)	0.01700	0.01154	1.473	0.141
Depersonalization (MBI_D)	0.00209	0.01918	0.109	0.913
Personal accomplishment (MBI_PA)	-0.03093	0.01293	-2.392	0.017
Sex:				
Male – Female	-0.40538	0.20565	-1.971	0.049
Marital status:				
Single – Married	-0.16212	0.19972	-0.812	0.417

Continues

Table 3
Continued

	Estimate	SE	Student's *t*	*p*-value
Separated, divorced – Married	0.21590	0.26423	0.817	0.414
Profession:				
Social worker – Educator/ professional educator	0.76898	0.51387	1.496	0.135
Nurse or health professional – Educator/ professional educator	1.12885	0.37541	3.007	0.003
Medical doctor – Educator/ professional educator	1.56228	0.43574	3.585	<0.001
Health care assistant – Educator/ professional educator	0.95142	0.41814	2.275	0.023
Psychologist – Educator/ professional educator	0.97543	0.49426	1.974	0.049
Administrative / technical staff – Educator/ professional educator	0.91688	0.47329	1.937	0.053
Department:				
Emergency – Addiction	1.46026	0.38296	3.813	<0.001
Mental health – Addiction	0.58359	0.36164	1.614	0.107
Other – Addiction	0.90502	0.30236	2.993	0.003
Setting:				
Missing – Nursing home	-0.39312	1.66211	-0.237	0.813
Hospital – Nursing home	-0.29011	1.39251	-0.208	0.835
Territorial/ambulatory – Nursing home	-0.69615	1.40057	-0.497	0.619

AUD: alcohol use disorder; DUD: drug use disorder (cocaine, amphetamine, or opioid); MBI_D: Maslach Burnout Inventory Depersonalisation Scale; MBI_EE: Maslach Burnout Inventory Emotional Exhaustion Scale; MBI_PA: Maslach Burnout Inventory Personal Accomplishment Scale; SE: Standard Error; WHO-5: The World Health Organisation- Five Well-Being Index.

higher levels of emotional exhaustion, and counterintuitively with higher levels of psychological well-being showed higher levels of personal stigma towards SUDs. Moreover, nurses, health professionals, and administrative/technical staff exhibited greater personal stigma, while working in addiction departments was associated with lower levels of stigma. In terms of social distance, sex, specific profession, department, and the burnout dimension of personal accomplishment played key roles. Decreasing levels of personal accomplishment, indicative of increased burnout, are associated with higher levels of social distance. Females, nurses, physicians, health professionals, and administrative/technical staff reported higher social distance, and again professionals in addiction departments displayed lower social distance.

Previous literature also showed a positive correlation between burnout scores and stigma levels [26, 27], proposing that professional burnout is an important variable in the development of negative feelings towards patients, including stigmatizing attitudes. In particular, this might be due to the fact that workers who experienced burnout tend to feel to no longer have the necessary resources to deal with the more complex situations faced at work, and SUD patients are consistently considered as more dangerous, more unpredictable, and more difficult to deal with [4, 5] constituting important work challenges for healthcare personnel. A peculiar result was found concerning the positive correlation between psychological well-being and personal stigma. Psychological well-being is typically related to burnout [28, 29], so that we expected that lower levels of psychological well-being would have predicted higher levels of stigma, aligning with the trend observed in burnout. However, this discrepant result might be attributed to the perception of SUD as not being a real medical condition and of SUD patients as being more responsible for their condition compared to people with other disorders [30, 31]. These types of beliefs might not be influenced by the level of psychological well-being one has, as stereotypes might be developed earlier in life and may not be easily modified by a transient state of psychological well-being [26]. The results of the present study concerning the impact one's profession on stigma levels are in line with previous studies demonstrating that health professionals who work more frequently or have more contact with SUD patients have more positive attitudes towards the latter as compared to other health professionals [5]. This phenomenon could be attributed to familiarity with a particular condition, as suggested by the contact hypothesis [5]. Individuals, such as professionals in addiction departments, who have greater exposure, knowledge, and experience with the stigmatized condition, are more likely to demonstrate increased tolerance and develop more positive attitudes toward people with the condition [32, 33].

There are some important limitations worth considering that may restrict the generalizability of the results of the present study. First, data were collected through a self-reported questionnaire and may not accurately reflect participant's stigmatizing attitudes and behaviours. This limitation particularly applies to the results regarding the prescription of examinations and visits to SUD patients compared to persons without these disorders, in which marked differences were not found reflecting a positive and correct medical conduct; however, we cannot clearly state whether this is the real behaviour of physicians given that the results were self-reported. Our results could be affected by social desirability bias, where the physicians answered the questions to pres-

ent themselves in more socially acceptable terms. Furthermore, the ad-hoc questionnaire used to fulfil the objectives of the study is not a validated instrument of measurement; even if this allowed us to analyse different aspects of stigma, the resultant data might not be replicable in future studies. Finally, the present study utilized a cross-sectional design and surveyed a non-representative sample of healthcare workers. Therefore, our results cannot be used to make inferences to other healthcare contexts.

Future research should consider using validated and objective tools to assess the different facets of stigma. For example, future works should evaluate clinical practice with more objective methods analysing the prescribed examinations during emergency visits of SUD patients and non-SUD patients. Moreover, future studies should expand the investigation by adopting a longitudinal study design, recruiting a more representative sample of healthcare personnel, including workers of other Italian Local Health Units.

CONCLUSIONS

In conclusion, healthcare workers show a more pronounced stigma towards people with cocaine, amphetamine, or opioid use disorder than towards people who use alcohol. In general, stigma is higher towards people suffering from SUDs than towards people suffering from other psychiatric or physical disorders. Importantly, high level of burnout results in higher levels of stigma towards SUDs patients. Furthermore, stigma levels differ between staff working in different departments, highlighting that those working in addiction departments show less stigma than those working in mental health, emergency, or other departments. Interestingly, although counterintuitive, it was found that higher levels of psychological well-being were linked to higher levels of stigma.

Further research is needed to explore whether stigma could be related to beliefs and biases about addiction causes and to poor levels of medical, psychological, and psychiatric knowledge on addiction clinical issues. Indeed, attitudes regarding the willingness to work with individuals with SUDs, patient treatment adherence, and motivational changes often seem to be influenced more by common beliefs and preconceptions rather than scientific knowledge. It is crucial to enhance healthcare professionals' knowledge, expertise, and adherence to effective guidelines, especially concerning addiction aetiology, diagnosis, and treatment. As previous literature suggests [34-36], specific training should be provided to address stigma, particularly among psychiatrists and mental healthcare professionals, in order to improve the personnel attitudes towards SUD patients and increase overall knowledge about the condition and its implications. Furthermore, training should also focus on improving the psychological well-being, including the prevention and management of burnout, of healthcare professionals not only to reduce the possibility of encountering stigmatizing behaviours in clinical contexts but also to cultivate a healthier and more resilient workforce.

Ultimately, reducing stigma and improving attitudes towards individuals with SUDs is essential to foster better patient-provider relationships and promote more effective treatment outcomes. By prioritizing education and providing targeted interventions against stigma, healthcare professionals can play a pivotal role in enhancing the overall well-being of patients facing addiction challenges.

Authors' contributions

Conceptualization: MS and DS; data curation: AV; formal analysis: AV and SP; investigation: DS, GZ, AM, RM, AP, VP, GG, VS; methodology: MS and DS; project administration: DS; resources: GZ; supervision: DS and MS; writing – original draft: AV; writing – review and editing: AV, DS, EB, AM, RM, AP, VP, GZ, VS, GG, SP, and MS.

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Conflict of interest statement

The Authors declare no conflict of interest.

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