

# Global Assessment of Training Needs in Addiction Medicine

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## Keywords

Training needs assessment · Addiction medicine · Competencies · Benchmarking · Substance use disorders

## Abstract

**Introduction:** A minority of addiction patients receive appropriate treatment directly from trained professionals in addiction medicine. Most countries have not recognized addiction medicine (AM) as a specialty in its own right or within psychiatry/other specialties. Therefore, the effectiveness and organization of AM training around the world need to be improved. Unfortunately, standard instruments are rarely used in most studies to assess training needs. This study aimed to determine international competencies in AM among professionals in as many countries as possible using a standard instrument such as the AM Training Needs Assessment (AM-TNA). **Method:** We examined competencies in AM with the AM-TNA using an online survey. A General Competency Level in Addiction Medicine (GLOCIAM30) was calculated by dividing the total score by the number of 30 items. This GLOCIAM30 was used to measure the general level of competency in AM and to compare individual competencies. **Results:** One hundred ninety-nine respon-

dents from 45 countries completed the survey. Ninety-five of the 199 respondents (49.0%) had a GLOCIAM30 higher or equal to 4 (fairly competent). The highest skill level was found for the competency "Assessing substance use problems by taking the patient's history." Nine of the 45 countries had 8 or more respondents ( $n = 129$ ). After post hoc analysis, there was no difference between these countries. Respondents could reasonably estimate whether the competency level in their country was higher or lower than the world average. **Conclusions:** This study is the first international attempt to examine competencies in AM. Although a much larger study population is needed to establish an overall goal for competencies in AM, our study provided an initial direction for such a gold standard in benchmarking procedures.

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Published by S. Karger AG, Basel

## Introduction

Over the last few decades, the medical concept of addiction has undergone tremendous development. Substance use disorders (SUDs) [1] are currently considered multifactorial chronic diseases and have become a

significant cause of global health burden and psychiatric disorders [2–7].

SUDs are a global public health problem with a significant treatment gap across countries. Currently, there are many forms of effective and evidence-based treatment for drug and behavioral addiction, including psychological, social, and pharmacological interventions. However, addiction treatment is only available in 30% of countries globally, and only a minority of addiction patients receive appropriate treatment directly from trained addiction medicine (AM) professionals [8–12]. The high prevalence of SUD necessitates adequate training of medical professionals specialized in AM.

Different aspects of knowledge and skills are needed for psychiatrists and other medical professionals treating patients with SUD, and the opportunity to receive this type of training will have a significant impact worldwide [13]. A recently conducted survey [10] among early career AM professionals also revealed there was a lack of standardized training in AM across the world. Hence, it is imperative to assess training needs to address the issue of lack of standardized training across countries [10].

The International Society of Addiction Medicine, ISAM, is an international fellowship of physicians founded in 1998. ISAM has over 35 Affiliate physician societies and multidisciplinary organizations, providing a platform to generate insights into AM practice globally. In 2013, the International Society of Addiction Medicine (ISAM) organized a global survey on AM training in different countries around the world [11]. Although the results were promising and 31 countries participated, only a few countries provided formal training and certification. Most countries have not recognized addiction as a formal specialty by itself or by the field of psychiatric or other medical specialties. Even in countries where specialist programs exist, the number of such courses and its output of addiction specialists are limited considering the magnitude of substance use problem [12].

Recent studies in Europe [14, 15] as well as in other jurisdictions internationally [16] have highlighted significant variation in training programs and specialization pathways across countries. However, regardless of models of specialization, doctors supporting individuals living with SUDs may have varying perceived competencies and gaps in their knowledge base and skills. Scoping professionals' self-perceived training needs offers and opportunity for both reflective practice, as well as information to support localized workforce development efforts.

Internationally, the progress toward an AM specialty is universally incremental and currently in transition, creating unique challenges in implementation but also

opportunities for international group support and collaboration [17]. Given the substantial burden of stigma to harms associated with addiction, in addition to bridging the treatment gap, well-trained professionals have a critical role to play in promoting societal and policy shifts in the concept of addiction from a moral failure to a preventable and treatable medical disorder [18].

Local initiatives lead to structured ways to develop a knowledge-based AM curriculum. A training need assessment is an essential first step in developing a competency-based AM curriculum. Members of ISAM have tested this model hypothesis in Indonesia [19, 20]. The effectiveness and organization of AM training across the globe should be improved [21]. General core AM competencies for doctors based on an international consultation on training were formulated but are too general for the development of a curriculum [22]. Recently, proposals have also been made to bridge the knowledge gap between training needs and the actual provision of training [23].

By using a standardized and validated instrument, the Addiction Medicine Training Needs Assessment (AM-TNA) [24, 25], it has been demonstrated that training needs differ significantly between 4 countries [26]. A peer-led survey to assess training needs in AM is needed [23]. A standardized structured tool, such as the AM-TNA, could be used in such an endeavor.

The findings from such a survey could be used to develop a core set of competencies which is sufficiently flexible in its implementation to address the specific needs of the wide range of professionals working in AM across different settings and countries. While there is current evidence supporting strategies for developing competency in addiction psychiatry, there is a lack of studies measuring sustained competence over a longer term follow-up period. Standard tools are rarely used in most studies for training need assessment. In this regard the present study will help in addressing this research gap [19].

The goals of the Training Committee of the ISAM were to determine the level of competencies in AM among as many countries as possible using a standard instrument such as the AM-TNA.

With this survey, we wanted to answer three main questions:

1. How competent do AM professionals assess themselves in assessing a patient with a SUD, in starting treatment and in management of a patient?
2. What differences are there between the answers of the respondents from the participating countries concerning the competencies self-assessed with the AM-TNA?

3. Can AM professionals estimate correctly the general level of competence in their country compared to their colleagues worldwide?

Another objective of the Training Committee of the ISAM was to assess the standards and professional pathways of doctors into AM, as has previously been investigated in 2013 [11], 2015 [21], and 2017 [22] (see online suppl. File 3; for all online suppl. material, see <https://doi.org/10.1159/000542182>). The results of this part of the survey will be published in a separate publication.

## Methods

### *Design*

An international cross-sectional online survey was performed from November 2022 to May 2023, excluding 1 month at the end of 2022 when the online link was down.

### *Sampling Methodology*

To reach out to hard-to-access addiction professionals worldwide and in the absence of a sampling frame, this survey was disseminated using three methods. First, links were distributed in person to delegates at the ISAM Conference (November 2022). Second, survey information was promoted to all ISAM members through the ISAM monthly newsletter. Third, a letter of invitation was sent to the heads of ISAM Affiliate societies, inviting participation in a key informant survey and dissemination to membership lists. All invitations to participate were voluntary, with no consequences of non-participation. The target sample size was predecided to a maximum of 300 participants from 30 countries. For country-level analyses, countries would be included if data were available for at least 8 respondents.

### *Research Governance*

The research was conducted ethically following the World Medical Association Declaration of Helsinki, and written informed consent was obtained from all study participants for participation in the study before completing the scales. The study project was approved by Institute Ethics Committee (IEC), AIIMS, New Delhi Ref No IEC-283/01.04.2022. This study was neither sponsored nor subsidized.

### *Instruments*

#### *Sociodemographic Details*

The first part of the online survey solicited basic information about age, gender, qualification, training duration, and predominant practice setting (private or

public practice) (online suppl. file 1). To enable grouping of respondents from participating countries and reminders to be sent, participants were asked for identification information such as name and email address. A set of questions was posed to a key informant from each country, usually the nominated representative from the main addiction society in the region (online suppl. Table 3). These questions informed the determination of the prevalence of SUD within the country, and key priorities for the region, and characterized the training pathways for AM professionals. Subsequent parts of the survey were offered to all participants, including the AM-TNA.

#### The Addiction Medicine Training Needs Assessment (AM-TNA)

The AM-TNA questionnaire is a direct self-assessment of core skills-based competencies: 21 clinical and 9 nonclinical competencies in three professional domains: to assess substance use, to start treatment and to maintain treatment of patients with a SUD [14]. The instrument can be used to identify training gaps between current and desired AM performance but also applied to prioritize training needs for groups and tailor AM curricula and for self-assessment of improvement of competencies [26, 27]; (online suppl. file 2). The AM-TNA is a 30-item questionnaire, containing self-reported perceptions of proficiency on internationally recognized AM core competencies, using a 5-point Likert-scale: from not-at-all proficient to fully proficient. The original AM-TNA was a paper-based questionnaire that took 20 min to complete. For this survey, an online version was used. It has proven reliability and internal validity [26]. The instruments' external validity and ability to measure changes over time would benefit from additional research, focusing on longer term retention and compliance to the core competencies [22].

#### General Level of Competency in AM

The AM-TNA was used to calculate a sum score of the 30 items, the general level of competency in addiction medicine (GLOCIAM) and for comparability with individual competencies a GLOCIAM30 score by dividing the GLOCIAM by the number of the 30 items.

#### *Data Collection*

Study data were collected and managed using RED-Cap electronic data capture tools hosted at All India Institute of Medical Sciences [28, 29]. Research Electronic Data Capture is a secure, web-based software platform designed to support data capture for research

studies, providing (1) an intuitive interface for validated data capture; (2) audit trails for tracking data manipulation and export procedures; (3) automated export procedures for seamless data downloads to common statistical packages; and (4) procedures for data integration and interoperability with external sources. It is Health Insurance Portability and Accountability Act (HIPAA) – compliant, highly secure and user-friendly application for conducting online surveys [30].

### Data Analysis

The data collected were analyzed using SPSS Version 21.0 [31]. Categorical data were summarized using frequency (percentages) and continuous data was summarized as means and standard deviations (SDs). Descriptive analysis of the 30 items of the AM-TNA, GLOCIAM, and GLOCIAM30 were performed. A *t* test for independent samples was used for comparison between the two groups. A comparative analysis was performed between countries with 8 or more respondents using an analysis of variance. We used Pearson correlation to assess the association between the years of training/experience in AM and the four subscales of the AM-TNA.

For a re-exploration of the construct validity, a principal component analysis with a Varimax rotation was conducted on the AM-TNA scales. The Kaiser-Meyer-Olkin measurement confirmed sample adequacy for both the AM-TNA (0.95). The results of the EFA indicated that none of the items in either questionnaire was redundant. All factors were well above the standard exclusion criterion (loading <0.40 on either factor). Bartlett’s test for sphericity was significant ( $\chi^2$  5,742.27,  $p < 0.001$ ), indicating that the interim correlations were adequate. After the varimax rotation, the factor loadings accounted for a cumulative 71.2% explained variance over four factors of the AM-TNA. The four factors were named (1) diagnostic Procedures (8 items), (2) psychiatric comorbidity and Relapse Management (5 items), (3) BioPsychoSocial Approach and multidisciplinary collaboration (10 items), and (4) medical interventions (7 items) (see online suppl. 5).

To determine whether AM professionals could assess the general level of competence in their country relative to their colleagues worldwide, Hofstee’s betting model was used [30, 32]. When this model is used for individual respondents, they are invited to rate two opposing statements of a proposition and indicate how likely each proposition is by assigning a value to it. Thus, they are invited to carefully weigh both statements against each other and arrive at a better, cal-

**Table 1.** The sociodemographic characteristics of the respondents ( $N = 199$ )

Mean age (SD), years	48.3 (12.6)
Range	22–83 years
Gender, <i>n</i> (%)	
Male	106 (52.7)
Female	93 (46.3)
Years of training, mean (SD)	17.0 (10.8)
Range	1–46 years
Work setting, <i>n</i> (%)	
Private	40 (20.1)
Public	159 (79.9)
Issues in your training which need to be addressed, <i>n</i> (%)	
Yes	145 (72.9)
No	54 (27.1)

culated guess than if they only had to choose from one of the two statements.

From all respondents, the mean of the GLOCIAM was calculated, the  $G_{\text{global}}$ , and from the respondents from each country, the  $G_{\text{country}}$ . Every respondent was challenged to give a calculated guess by answering two questions:

Q1: What do you think is the probability that this survey shows that the GLOCIAM of professionals in your country will be **higher** than the international average? and

Q2: What do you think is the probability that this survey shows that the GLOCIAM of professionals in your country is **lower** than the international average?

They answered by estimating the probability that the survey will show that the  $G_{\text{global}}$  will be higher/lower than their  $G_{\text{country}}$  score on a VAS of 0–100.

This will result in five groups: A: if the country score is higher than the global score and the individual probability-higher minus probability-lower is positive this results in a positive score (gain), B: if the country score is higher than the global score and the individual probability-higher minus probability-lower is negative this results in a negative score (loss), C: if the country score is lower than the global score and the individual probability-higher minus probability-lower is negative this results in a negative score (loss) and D: if the country score is lower than the global score and the individual probability-higher minus probability-lower is positive this results in a positive score (gain). In case a respondent estimates both probabilities to be equal then that results in no gain a priori, group E.

## Results

The survey link was visited 393 times, and 199 respondents from 45 countries (for the number of respondents per country see online suppl. file 4) completed the survey; 194 surveys were started but not completed. During the sampling period, the survey link was down for unknown technical reasons for 1 month.

Table 1 shows the sociodemographic characteristics of the respondents. The ratio male/female was 106/93 (52.7%/46.3%). There was a wide range of years of training (1–46 years). From the 45 countries, there were 9 countries with 8 or more respondents: France (34), Netherlands (16), Lithuania (16), Norway (15), Australia (13), Indonesia (10), Iran (9), Argentina (8), and India (8).

Table 2 shows the 30 AM-TNA competencies in descending order. Of five of the 199 respondents, the AM-TNA was incomplete. The highest level of proficiency was found in the competencies “Assessing substance use problems by taking a patient’s history” and “Explaining diagnosis, and prevention and treatment plan to the patient,” and the lowest level involved “Assessing substance use problems by a physical examination,” and “Managing intoxication.” Thirteen of the competencies were in the scoring range of 4, fairly competent.

Ninety-five of the 194 respondents (49.0%) had a GLOCIAM30 higher or equal to 4 (fairly competent) of which 4 were with a maximum score of 5 (extremely proficient). Eighteen (9.3%) had a GLOCIAM30 lower or equal 3 (slightly proficient). The rest, 81 (41.7%), had a score within the range between 3.0 and 3.9 (adequately proficient). There was no difference between male and female respondents ( $t$  value = 0.58;  $p$  value = 0.56).

Table 3 shows the means and SDs of the General Competency Level in Addiction Medicine (GLOCIAM) and the four aforementioned subscales of the AM-TNA. Although there are no big differences between the levels of proficiency on the four subscales, the mean score for diagnostic procedures is the highest.

The table also shows the correlations between the years of training in AM and the GLOCIAM and its subscales, with the highest positive correlation with the subscale BioPsychoSocial Approach and Multidisciplinary Collaboration (Pearson coefficient 0.27,  $p < 0.001$ ). Nine of the 45 countries had 8 or more respondents, with 129 respondents in this group and 70 in the group with less than 8 respondents. There was a significant difference between the means of the GLOCIAM in the  $>8$  groups, 3.80; SD 68 and the  $<8$  one, 4.14; SD 79 ( $t$  value 3.02,  $p$  value = 0.003).

Table 3 also shows the means and SDs for the GLOCIAM and the four subscales for the 9 countries with 8 or more respondents. Although there was a significant difference for the GLOCIAM and subscales between these countries, there was no difference between any of the countries after post hoc analysis (Bonferroni). Figure 1 shows the GLOCIAM of these countries, with the highest score for Australia and the Netherlands and the lowest for Argentina and Indonesia.

Table 4 shows the differences in the GLOCIAM of the AM-TNA and its subscales between the private and public setting of the respondent and the question if they think there are issues in their level of training or not. Professionals in the private sector had significantly lower scores on the subscale Diagnostic Procedures and Medical Interventions than those in the public sector. Those who indicated that they had whatsoever issues with their level of education had significantly lower scores on GLOCIAM and its subscales except for the subscale Psychiatric comorbidity and Relapse Management than those who did not have issues.

No  $G_{\text{country}}$  score appeared to be equal to the  $G_{\text{global}}$  of the GLOCIAM. Twenty-two countries had higher scores in  $G_{\text{global}}$  of which 13 were with only one respondent, and 23 countries had lower scores.

As discussed in the statistical paragraph, we answered the question of whether AM professionals could assess the general level of competence in their country relative to their colleagues worldwide using the betting model. This resulted in two groups who guessed right and won their bet: A ( $n = 55$ , mean = 51.4, SD = 24.0; range +1 to +97) and D ( $n = 41$ , mean 36.7, SD = 19.9; range –2 to –60). Two groups who guessed wrong and lost their bet: B ( $n = 7$ , mean = –30.7, SD = 20.7; range –2 to –60) and C ( $n = 62$ , mean = –40.3, SD = 23.2; range –3 to –100). Group E ( $n = 25$ ) guessed safely without gain or loss.

## Discussion

One hundred and ninety-nine respondents from 45 countries completed the survey, and 9 countries had 8 or more respondents. The highest level of proficiency was found in the competencies “Assessing substance use problems by taking a patient’s history” and “Explaining diagnosis, and prevention and treatment plan to the patient.” The lowest level involved “Assessing substance use problems by a physical examination,” and “Managing intoxication.”

As might be expected of professionals in AM, survey respondents assessed themselves as much more

**Table 2.** AM-TNA competencies in descending order ( $n = 194$ )

	Min	Max	Mean	SD
03 Assessing substance use problems by taking a patients history	2	5	4.31	0.79
09 Explaining diagnose, and prevention and treatment plan to the patient	1	5	4.29	0.79
08 Formulating a diagnose using standard diagnostic criteria for addiction disorders (DSM or ICD)	1	5	4.16	0.91
17 Consulting other medical professionals	1	5	4.13	0.90
02 Screening risk of substance use problems	2	5	4.09	0.91
27 Collaborating with other medical professionals	2	5	4.06	0.89
19 Selecting indicated maintenance and treatment medications	1	5	4.05	0.98
14 Using evidence-based and up to date approach in treatment	1	5	4.05	0.82
12 Starting maintenance and substitution treatment	1	5	4.04	1.06
21 Managing withdrawal	1	5	4.03	1.02
30 Addressing additional psychological and psychiatric problems	1	5	4.01	0.97
15 Using motivational techniques to support adherence to treatment	1	5	4.01	0.91
11 Selecting indicated initial treatment medications	1	5	4.01	0.93
29 Distinguishing substance abuse problems from psychiatric comorbidity	1	5	3.99	0.97
06 Interpreting substance abuse using screening, assessment, laboratory results	1	5	3.98	0.97
10 Developing a written treatment plan	1	5	3.98	0.98
07 Using evidence-based approach in assessment	1	5	3.95	0.91
16 Using basic psychosocial strategies to support recovery	1	5	3.94	0.96
01 Selecting appropriate screening or assessment tools for substance use	1	5	3.92	0.89
28 Collaborating with non-medical professionals	1	5	3.92	1.01
25 Monitoring substance use patients for relapse throughout treatment	1	5	3.90	1.02
05 Selecting appropriate diagnostic laboratory tests	1	5	3.87	0.98
22 Managing craving	1	5	3.87	0.96
18 Consulting non-medical professionals	1	5	3.86	1.09
13 Providing general medical and social care to addiction patient	1	5	3.83	0.97
04 Assessing substance use problems by a physical examination	1	5	3.66	1.02
20 Managing intoxication	1	5	3.63	1.09
23 Managing overdoses	1	5	3.35	1.14
26 Using groups interventions effectively	1	5	3.34	1.18
24 Managing medical emergencies	1	5	3.20	1.12

competent than other participants in previous studies using this survey, predominantly trainees or students, for instance psychiatry trainees in Lithuania ( $n = 41$ ) [33]: fairly competent 49% versus 7.3%, adequately proficient 41.7% versus 19.5%, and slightly proficient 19.3% versus 73.2%. It also appears that compared to a group of general practitioners in training, AM professionals have much higher means for all the 30 competencies of the AM-TNA [26].

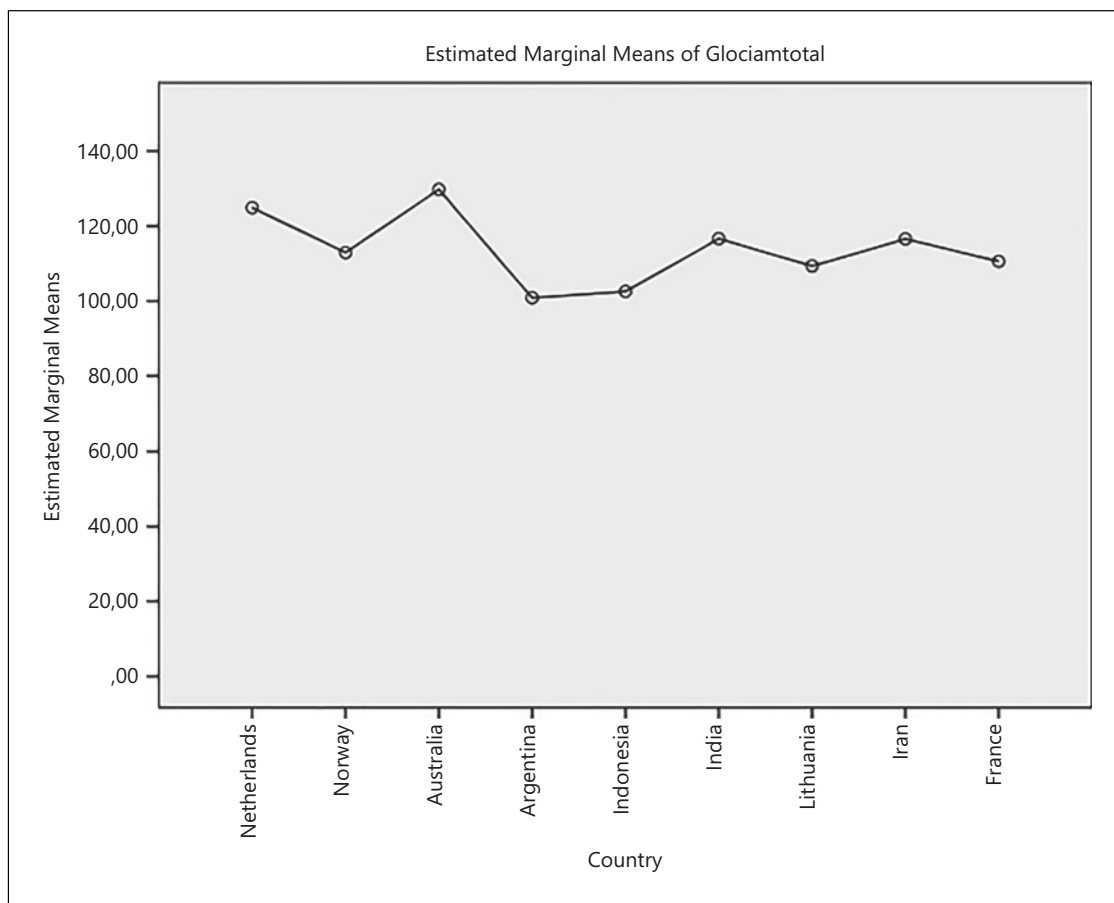
Several physicians in training also participated in the survey, the AM-TNA standardized instrument assessed competencies in the group. Considering there are no known evidencebased strategies to improve competencies in AM/psychiatry the findings of the survey could inform development of such strategies in future and would better equip workforce in the field [34, 35].

The number of years of training/experience in AM correlates significantly with the GLOCIAM and its

**Table 3.** Means and SDs of the General Competency Level in Addiction Medicine (GLOCIAM) (*n* = 194) correlations with years of training/experience in AM and the four subscales of the AM-TNA for 9 countries with 8 or more respondents

	Mean (SD) ( <i>n</i> = 194)	<i>r</i> <sup>2</sup> years training	Netherland ( <i>N</i> = 16)	Norway ( <i>N</i> = 14)	Australia ( <i>N</i> = 13)	Argentina ( <i>N</i> = 8)	Indonesia ( <i>N</i> = 9)	India ( <i>N</i> = 8)	Lithuania ( <i>N</i> = 16)	Iran ( <i>N</i> = 9)	France ( <i>N</i> = 33)	F	Sig
GLOCIAM	117.67 (21.91)		124.94 (15.42)	112.93 (15.93)	129.77 (14.65)	100.86 (19.29)	102.56 (24.42)	116.63 (22.21)	109.38 (15.06)	116.56 (27.46)	110.60 (20.79)	2.87	0.006
GLOCIAM30	3.92 (0.73)	0.24**	4.16 (0.51)	3.76 (0.53)	4.33 (0.49)	3.36 (0.64)	3.42 (0.81)	3.89 (0.74)	3.65 (0.50)	3.89 (0.92)	3.69 (0.69)	2.87	0.006
Diagnostic procedures	4.06 (0.75)	0.21*	4.30 (0.58)	3.90 (0.59)	4.40 (0.51)	3.36 (0.36)	3.66 (0.77)	4.06 (0.72)	3.85 (0.55)	4.04 (0.77)	3.91 (0.76)	2.49	0.016
Psychiatric comorbidity and relapse management	3.99 (0.82)	0.23**	4.29 (0.56)	3.76 (0.62)	4.48 (0.49)	3.70 (0.76)	3.47 (0.78)	4.00 (0.77)	3.60 (0.59)	3.80 (1.11)	3.62 (0.84)	2.57	0.013
BioPsychoSocial approach and multidisciplinary collaboration	3.90 (0.77)	0.27**	4.03 (0.53)	3.76 (0.53)	4.27 (0.53)	3.52 (0.91)	3.31 (0.87)	3.99 (0.73)	3.53 (0.71)	4.16 (0.75)	3.67 (0.74)	2.76	0.008
Medical interventions	3.71 (0.89)	0.15*	4.12 (0.58)	3.58 (0.61)	4.21 (0.58)	2.89 (0.36)	3.30 (0.89)	3.46 (1.28)	3.60 (0.64)	3.38 (1.50)	3.47 (0.77)	2.94	0.005
GLOCIAM30 was calculated by dividing the total score of all competencies by 30 (competencies). <i>r</i> <sup>2</sup> Pearson correlations: * < 0.05. ** < 0.01.													





**Fig. 1.** GLOCIAM of the 9 countries, with the highest score for Australia and the Netherlands and the lowest for Argentina and Indonesia.

**Table 4.** Means and SDs of the General Competency Level in Addiction Medicine (GLOCIAM) ( $n = 194$ ) and the four subscales of the AM-TNA for private and public work settings

	Private, mean (SD) ( $n = 38$ )	Public, mean (SD) ( $n = 156$ )	$t$ value; $p$ value	Issues, mean (SD) ( $n = 140$ )	No issues, mean (SD) ( $n = 54$ )	$t$ value; $p$ value
GLOCIAM	112.16 (22.84)	119.01 (21.53)	-1.73; 0.08	114.89 (21.73)	124.85 (20.89)	-2.89; 0.004
Diagnostic procedures	3.82 (0.81)	4.12 (0.73)	-2.34; 0.02	3.97 (0.75)	4.31 (0.70)	-2.97; 0.003
Psychiatric comorbidity and relapse management	3.91 (0.84)	4.01 (0.82)	-0.64; 0.52	3.92 (0.84)	4.17 (0.77)	-1.93; 0.055
BioPsychoSocial approach and multidisciplinary collaboration	3.80 (0.76)	3.95 (0.77)	-1.07; 0.29	3.82 (0.78)	4.18 (0.67)	-2.95; 0.004
Medical interventions	3.41 (0.94)	3.78 (0.86)	-2.29; 0.02	3.61 (0.87)	3.96 (0.91)	-2.47; 0.014



subscales. This follows our previous finding that the level of competence increases significantly in 4 years among psychiatrists-in-training [33].

We found that professionals in the private sector scored their competency lower on the Diagnostic Procedures and Medical Interventions subscale compared to those in the public sector. This may relate to structural supports for continuing medical education within the public sector (e.g., journal clubs, academic meetings, continuing professional development programs), as well as the emphasis on multidisciplinary team-based environments within the public as compared to private settings. Since a sizeable proportion of addiction professionals (20% in the present survey) are working in the private sector, it is important to understand barriers to continuous professional development and periodic competency assessment in the AM/psychiatry specialty [36].

Further findings with the GLOCIAM included lower scores correlating with lower levels of education. It makes sense that if respondents have issues with their level of education, they will have lower scores on GLOCIAM on three of its four subscales, than those who do not. They acknowledge that they lack proficiency in several domains of AM.

Nine of the 45 countries had 8 or more respondents, with 129 respondents in this group and 70 in the group with less than 8 respondents. Respondents from countries with fewer than 8 respondents have significantly higher GLOCIAM30 scores than respondents from countries with more than 8 respondents. This could be because countries with fewer than 8 respondents have a very small sample size, and more vulnerable to sampling bias – those who respond are likely to be “early adopters” and motivated to participate, which may result in self-selection bias.

Although there are differences between 9 countries with more than 8 respondents for the GLOCIAM and the four subscales, there is no difference between countries in the post hoc analysis. We suspect this is mainly due to the small groups being compared. Unfortunately, this survey does not allow us to examine whether there is a difference between respondents who have completed formal training and meet the requirements of re-registrations and those who have not. We do know that there are differences in certification paths and educational backgrounds in the field of AM in different countries. Future studies should include questions about how AM training is performed in each country, as well as measuring the amount of formal AM training each participant has

received, as well as years of clinical experience in the field of AM.

Our last main question was if professionals in AM can assess their level of general competence relative to peers by means of a calculated guess method? The general answer is that some can and some cannot. Twenty-two countries had higher scores than the  $G_{\text{global}}$  mean of which 13 were with only one respondent and 23 countries had lower scores. Ninety-six respondents assessed their level correct, 69 incorrect and 25 took no risk.

### Strengths and Limitations

This is the first ever systematic survey focusing on a global comparison between professionals in AM on their self-assessed competencies in their field with a validated instrument like the AM-TNA.

The AM-TNA was originally developed during the process of planning a AM training course in Indonesia and the instrument was validated in four countries (Indonesia, Lithuania, Ireland, and the Netherlands). Because of differences in the prevalence of SUD between countries, the AM-TNA for a given country may not capture all the competencies needed to provide optimal care. We did not know which respondents have received certified training in AM. Therefore, we could not determine whether having a qualification in AM or addiction psychiatry leads to a higher self-assessment of the level of competence. We would like to highlight that it is important to recognize that competence in AM can be measured in various ways depending on the country. While certification is one measure, other valid indicators include years of training or the duration of professional work in the field. Each country may have different standards and paths to achieving competence in AM, and relying solely on certification may not provide a comprehensive picture. Therefore, considering diverse measures of competence, such as practical experience and the length of training, can offer a more inclusive and representative understanding of AM proficiency globally. A follow-up study should explicitly address this.

The lower response rate than expected can be partially explained by the fact that the online link to REDCap was down for a 1-month period. Future research is needed to invest in other opportunities to maximize responses. The ISAM GEN methodology may encompass these problems [37]. The low response rate made it challenging to conduct cross-country comparisons, or to examine correlates of competency results. In international surveys, there are a number of pitfalls because of the existence of

variable response styles [38]. Unfortunately, in our study, even the number of respondents from the 9 countries with 8 or more respondents was too small to evaluate pitfalls by performing a comparison between these countries. In future studies of competence in AM, other methods of recruitment of participants should be considered, for example, going through governmental organizations or other international bodies. Although a much larger study population is needed to establish an overall target for competencies in AM, our study provided an initial direction for such a gold standard.

## Conclusion

This study is the first international attempt to examine competencies in AM. Strengths of the study include the use of a validated instrument, the AM-TNA, as well as use of an international fellowship of addiction physicians (ISAM) to draw on contemporary insights from current professionals in the field. This study confirmed the factor structure of the AM-TNA instrument, pointing to its utility for future research. Results highlight that self-perceived competencies are higher in history-taking and assessment domains, compared to physical examination and management of intoxication; and that more experienced physicians perceive their competencies as higher compared to previous studies of trainees or students. Although a much larger study population is needed to establish an overall goal for competencies in AM, our study provided an initial direction for such a gold standard in benchmarking procedures.

## Acknowledgments

Dr. Ankita Chattopadhyay, All India Institute of Medical Sciences, New Delhi (AIIMS) for her help in drafting the protocol for this study.

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## Statement of Ethics

The research was conducted ethically following the World Medical Association Declaration of Helsinki, and written informed consent was obtained from all study participants before participation in the study. The study was reviewed and approved by the Institute Ethics Committee of the All India Institute of Medical Sciences, New Delhi, India (ref. No. IEC-283/01.04.2022). This study was neither sponsored nor subsidized.

## Conflict of Interest Statement

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the publication.

## Funding Sources

This research received no specific grant from any public, commercial or not-for-profit sector funding.

## Author Contributions

C.A.J.D.J.: corresponding author, research conception and design, contributed to data analysis and interpretation of results, and writing, revising, and finalizing the manuscript. G.W.-S.: research conception and design, interpretation of results, writing, revising and finalizing the manuscript, and approval. E.H. developed and contributed to data collection, results interpretation, and manuscript revision and approval. L.P. contributed to interpreting the results and revising and approving the manuscript. R.B.: coordinated the ethics approval procedure and developed and contributed to data collection revising and approving the manuscript. S.A.: contributed to the research design, interpreting the results, and writing, revising, and approving the manuscript.

## Data Availability Statement

The data that support the findings of this study are not publicly available due their containing information that could compromise the privacy of research participants but are available from the corresponding author [C.A.J.D.J.].

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