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Attitudes of European psychiatrists on psychedelics: a cross-sectional survey study

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Research and public interest in psychedelic-assisted psychotherapy (PAP) are growing. This study investigated attitudes toward psychedelics among a diverse and multinational sample of psychiatrists currently working in Europe. We conducted an anonymous, web-based survey consisting of demographic information, a test of basic knowledge on psychedelics, and the previously validated 20-item Attitudes on Psychedelics Questionnaire (APQ), which was validated for the first time in English within this sample. We included N = 419 participants from 33 countries in the study. One-third of participants (34%) reported past use of psychedelics. The APQ sub-scale with the highest score was *Openness to Psychedelics*, while *Risk Assessment of Psychedelics* was rated lowest. Regression modelling, explaining 31.3% of variance in APQ scores, showed that younger male psychiatrists who identified as spiritual, were better at recognizing and classifying substances as psychedelics and had previously used psychedelics had more positive attitudes on psychedelics. No professional variables besides self-reported previous experience with PAP or psychedelic research predicted APQ scores. European psychiatrists, therefore, show a general openness to psychedelics and PAP, but are concerned by the potential risks associated with them. Our findings overall suggest that psychedelics are a subject where it is difficult to remain impartial. Protocol registration: The study was pre-registered at the Open Science Framework (available online at https://osf.io/upkv3).

Psychedelics are a group of psychoactive substances that have seen a recent resurgence of research interest regarding their potential in treating mental illness within psychedelic-assisted psychotherapy (PAP), but have also been subject to controversy[1,2]. The current wave of research has seen rapidly increasing interest and the loosening of regulatory barriers to psychedelic research imply the disappearance of some of the historic stigma on these substances[3]. At present, we are seeing a mismatch between the level of interest and enthusiasm surrounding psychedelics as tools for treatment and their prohibited legal status in many countries around the world[4]. Since this enthusiasm may lead to bias, it is important that high ethical and practice standards are enforced within psychedelic research, in proportion to their novelty and wide spectrum of possible effects[5]. Australia was the first to down-schedule psilocybin and 3,4-methylenedioxymethamphetamine (MDMA) in 2023, allowing them to be prescribed under strict legislation. However, a commissioned independent report criticized this decision as premature in light of the low quality of evidence presented in clinical trials involving these substances, in most part due to methodological issues with randomization, blinding, and attrition[6]. In early 2024, the European Union announced that it is allocating €6.5M for research on psilocybin for treating psychological distress in people with progressive incurable illnesses requiring palliative care[7]. This new development signals an upcoming intensification of the discussion around PAP and its future in Europe, as well; mental health professionals such as psychiatrists are likely to be involved in various decision-making processes and discussions around this topic.

There have been efforts to explore what mental health professionals, as potential PAP providers, feel about psychedelics. Generally, psychiatrists and psychologists showed a baseline openness to psychedelics in the context of medical use[8–13]. Some of their main concerns, however, were related to possible side effects of psychedelics, especially in relation to cognition[8,9]. They also claimed to have insufficient knowledge on psychedelics and PAP

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and that they require more education on this topic before its implementation in practice[11,14]. Overall, negative attitudes on psychedelics and PAP could potentially impact the likelihood of referring patients to PAP trials, the willingness to implement PAP in practice, or the quality of delivery of PAP[15]. A 2024 systematic review on this topic reported that the majority of surveys on attitudes on psychedelics among mental health professionals were conducted in the United States, Canada, and the United Kingdom; attitudes in other European countries are still unexplored[15]. Surveys in these studies used unvalidated instruments and heterogeneous methodological approaches and survey questions which makes comparison between different findings difficult. In a previous publication, we developed and validated the Attitudes on Psychedelics Questionnaire (APQ) to assess attitudes on psychedelics on a large sample of laypersons[16]. Such a scale allows for the quantification of an overall score that can be used as an objective summary measure in quantitative analyses, possibly also allowing future meta-analyses to be conducted. The APQ also has four different sub-scales which measure different aspects of this attitude, including to an individual's views on the legal uses and effects of psychedelics, their risk assessment of psychedelics, and their general openness to psychedelics and PAP.

Therefore, our aim in this study was to survey a large, geographically and culturally diverse sample of psychiatrists currently based in Europe and apply the APQ, along with a basic knowledge test on psychedelics, considering the previously self-reported knowledge gap in this population. We aimed to explore both personal and professional characteristics of our target population and how they relate to positive or negative attitudes as measured by the APQ and its sub-scales.

Results

Demographic information and response rate

A total of 680 surveys were recorded. The response rate was 61.6%, leaving 419 for inclusion into the study. The majority of excluded surveys (n = 186, 71.3%) were not completed, participants were not psychiatrists (n = 68, 26.1%), or were not based in Europe (n = 7, 2.7%).

The data came from 33 European countries, mostly from: Poland (n = 55, 13.1%), United Kingdom (n = 35, 8.4%), Italy (n = 33, 7.9%), Croatia (n = 30, 7.2%), Germany (n = 24, 5.7%), the Netherlands (n = 22, 5.3%), Sweden (n = 19, 4.5%), Slovenia (n = 17, 4.1%), Czech Republic and Estonia (n = 17, 4.1% each), as well as Bosnia and Herzegovina, North Macedonia, and Romania (n = 16, 3.7% each) (Supplementary Table S1 in the Supplementary Files).

There were 55.4% male respondents and the median age was 38 years (IQR = 31.0–47.8). They were predominantly psychiatry specialists (65.6%), working primarily in a hospital setting (67.3%), and who used an equally biological and psychotherapeutic treatment approach (57.8%). A smaller subset of participants reported having previous experience with PAP or psychedelic research (19.6%). Almost two-thirds of participants identified themselves as an atheist (32.2%) or agnostic (27.4%). Self-assessed knowledge on psychedelics was moderate (Md = 52.0 on a scale 0–100, IQR = 30.0–70.0), and the median number of scientific publications was Md = 2 (IQR = 0.0–15.0) Past lifetime use of a psychedelic was reported by 34.4% (n = 144) participants, most commonly involving psilocybin (24.3%), followed by MDMA (20%), while 58.9% of participants tried cannabis. A detailed overview of demographic data is provided in Table 1.

Attitudes on psychedelics scores

The four-factor 20-item model of the APQ in English was applied in this study for the first time, showing satisfactory psychometric characteristics (reported in the Supplementary Files), congruent with its initial validation in Croatian[16]. The median total score on the APQ scale (theoretical range 20–100) was Md = 66.0 (IQR = 56.5–75.0). The *Openness to Psychedelics* sub-scale had the highest median attitude scores (Md = 20.0, IQR = 17.0–22.0), followed by *Legal use of Psychedelics* (Md = 18.0, IQR = 15.0–20.0), *Effects of Psychedelics* (Md = 14.0, IQR = 12.0–18.0), and *Risk Assessment of Psychedelics* (Md = 14.0, IQR = 12.0–17.0), where all sub-scales had theoretical score ranges of 5–25. When looking at the frequencies of response options for individual APQ items, the *Openness to Psychedelics* sub-scale showed a visible trend towards higher agreement with its items, while participants tended to show the highest degree of uncertainty in terms of agreement or disagreement with items on the *Effects of Psychedelics* and *Risk Assessment of Psychedelics* sub-scales. A full overview of response frequencies for each item on the APQ is shown in Fig. 1.

Basic knowledge on psychedelics scores

The median score on the knowledge on psychedelics test (theoretical range 0–100) was Md = 86.0 (IQR = 82.0–91.0). The three most commonly correctly identified psychedelics were psilocybin (n = 411, 98.1%), LSD (n = 409, 97.6%), and mescaline (n = 385, 91.9%). Three non-psychedelics most commonly named as psychedelics were ketamine (n = 264, 63.0%), methamphetamine (n = 107, 25.5%), and gamma-hydroxybutyric acid (GHB) (n = 109, 26.0%). Responses for each substance are shown in Supplementary Table S2 in the Supplementary Files.

Additional analyses

All additional analyses are fully described and presented in the Supplementary Files. A regression model, explaining 31.3% of variance in APQ scores, showed that previous lifetime use of a psychedelic, higher basic knowledge on psychedelics test scores, younger age, considering oneself as spiritual, having previous experience with PAP or psychedelic research, and male gender were associated with more positive attitudes on psychedelics. The same predictors were significant when all the sub-scale scores of the APQ were the criterion variable, respectively, with the exception of the following: male gender was only associated with the *Legal Use of Psychedelics* and *Risk Assessment of Psychedelics* sub-scales, considering oneself as spiritual was associated with all sub-scales except

Variable	Md, IQR	n, %
Age (in years)*	38.0 (31.0–47.8)	
Number of published scientific papers	2.0 (0.0–15.0)	
Self-assessed knowledge on psychedelics (range 0–100)	52.0 (30.0–70.0)	
Gender		
Male		232 (55.4)
Female		182 (43.4)
I don't want to answer this question		2 (0.5)
Other		3 (0.7)
Education**		
Psychiatry trainee		144 (34.4)
Psychiatry specialist		275 (65.6)
Psychotherapy trainee		55 (13.1)
Licenced psychotherapist		55 (13.1)
PhD		81 (19.3)
Other		23 (5.5)
Place of work		
Hospital		282 (67.3)
Private hospital		10 (2.4)
Private practice		35 (8.4)
University		48 (11.5)
Other		44 (10.5)
Primary treatment approach		
Biological		145 (34.6)
Psychotherapeutic		22 (5.3)
Both biological and psychotherapeutic		242 (57.8)
This does not apply to me		10 (2.4)
Previous experience with psychedelic-assisted psychotherapy or psychedelic research		
Yes		82 (19.6)
No		337 (80.4)
Religious beliefs**		
Religious		72 (17.2)
Spiritual		110 (26.3)
Atheist		135 (32.2)
Agnostic		115 (27.4)
Other		58 (13.8)
Past personal experience with using psychoactive substances**		
Cannabis		247 (58.9)
LSD		81 (19.3)
Psilocybin		102 (24.3)
Ayahuasca		19 (4.5)
DMT		17 (4.1)
Mescaline		7 (1.7)
Ibogaine		3 (0.7)
MDMA		84 (20.0)
None of the above		163 (38.9)

Table 1. Demographic information for study participants N = 419. *n = 2 participant had missing data. One participant wrote "0" as their age, and another stated their age as 18, which was incompatible with the other information provided in the survey. As their surveys had all other information filled out, we decided not to exclude them, only to remove the value from the Age column to avoid skewing the results. ** The percentages do not add up to 100, as the participants could select multiple answers. Abbreviations: Md = median; IQR = interquartile range.

for *Legal Use of Psychedelics*, and having previous experience with PAP and with psychedelic research was associated with all sub-scales except *Openness to Psychedelics* (Supplementary Table S3 in the Supplementary Files).

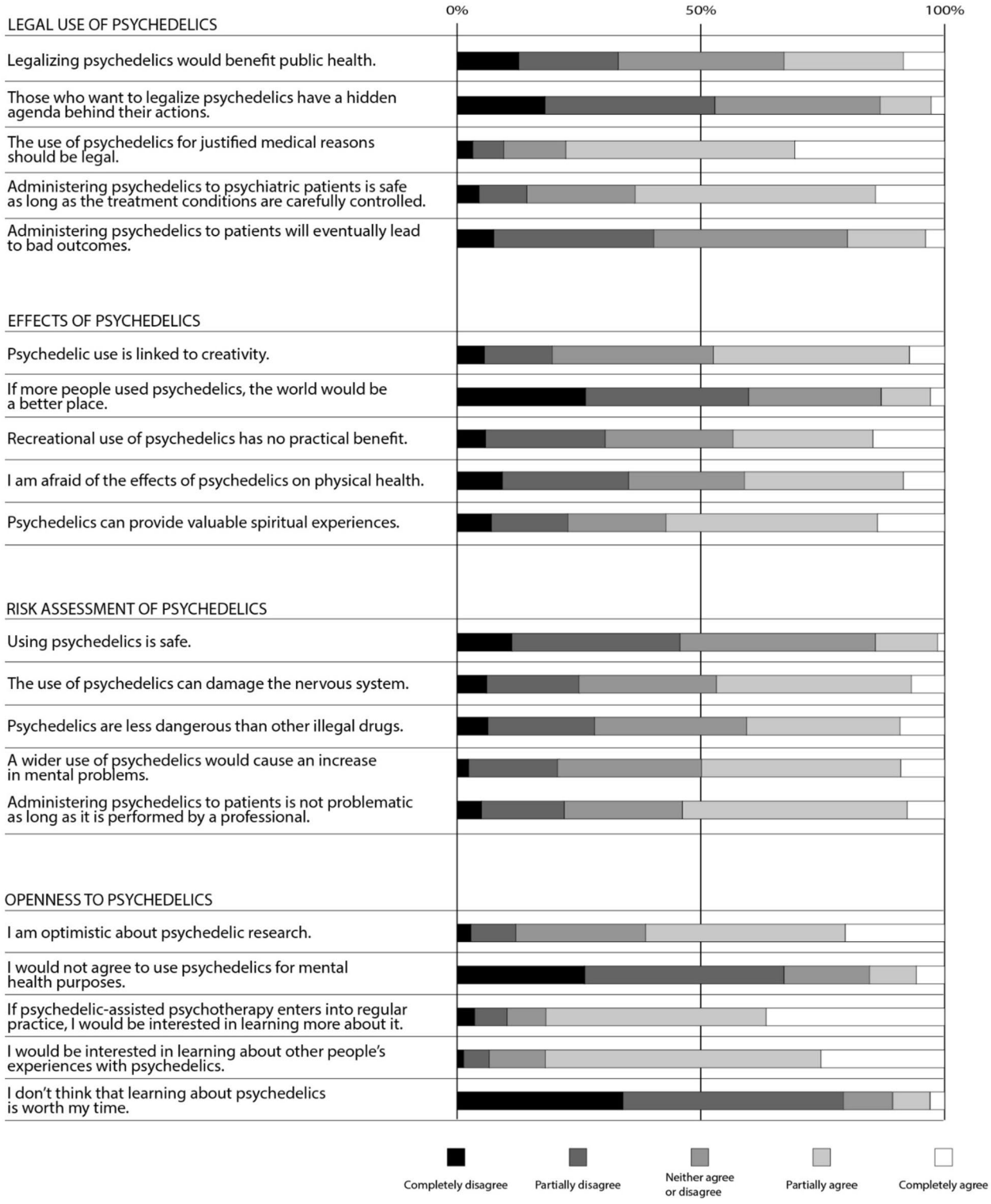

Figure. 1. Visual representation showing frequencies of response options marking participants' degree of agreement or disagreement with different items on the APQ. Note: the results of reversely worded questions are shown in their unreversed form to ease readers' comprehension.

In comparison to those without previous experience, psychiatrists who reported previous experience with PAP or experience with psychedelic research published more scientific papers, assessed their knowledge on psychedelics as higher, were more often male, had a higher frequency of working in a private hospital institution, identified as spiritual more often, and were more likely to have used cannabis, LSD, psilocybin, ayahuasca, DMT, mescaline or MDMA in the past (Supplementary Table S4 in the Supplementary Files).

When we analysed the possibility of attrition bias, we found that psychiatrists who did not complete the survey but still provided their demographic information were less overall likely to have ever tried cannabis or psychedelics in general (Supplementary Table S5 in the Supplementary Files).

Additionally, we compared participants of male and female gender by all variables which were predictive of APQ scores in the regression model in order to identify possible reasons for gender differences in attitudes on psychedelics (non-significant comparisons not shown). We found that males in our sample had a higher median age (Md = 40.0, IQR = 32.0–52.0 for males vs. Md = 36.0, IQR = 30.0–44.0 for women, $p < 0.001$), higher median basic knowledge test scores (Md = 91.0, IQR = 82.0–95.0 for males vs. Md = 86.0, IQR = 77.0–91.0 for women, $p < 0.001$), and assessed their knowledge on psychedelics higher than women (Md = 60.0, IQR = 31.8–72.0 for males vs. Md = 50.0, IQR = 25.0–65.0 for women). Males also reported having experience with PAP and psychedelic research more often (n = 57, 24.6% for males vs. n = 25, 13.7% in women, $p = 0.006$). Participants who did not want to disclose their gender (n = 2, 15%) and those who marked their gender as "Other" (n = 3, 0.7%) were not included in this analysis because they were too few in number.

Deviations from the protocol

One of the authors (IB) withdrew from the study due to time constraints. One question in the survey was reformulated. All changes from the pre-registered protocol are fully described in the Supplementary Files.

Discussion

European psychiatrists in our survey showed moderate overall attitudes on psychedelics and were successful in identifying psychedelics among a group of psychoactive substances, especially LSD, psilocybin, and mescaline. Younger male psychiatrists who identified as spiritual, showed better capability at recognizing and classifying substances as psychedelics, and had previously used psychedelics had more positive attitudes, in particular. No professional variables besides self-reported previous experience with PAP or psychedelic research were associated with attitudes on psychedelics. We also observed a significant positive association between both self-assessed knowledge on psychedelics and objectively tested basic knowledge on psychedelics with APQ scores, respectively.

These findings should be interpreted in light of a possible response and sampling bias. A high proportion of our participants tried cannabis and psychedelics; past use of these substances was also associated with more positive attitudes, it may be that participants with more positive attitudes were more likely to complete the survey. Although the attrition analysis was performed only with a smaller subset of participants who dropped out, those who dropped out but filled out the demographic information part of the survey had less experience with cannabis and psychedelics. Therefore, although we cannot account for all of the individuals who dropped out, it is likely that we may have lost participants who would have skewed findings towards more negative APQ scores. Our actual response rate is most likely very low (< 3%), considering a large number of organizations initially contacted with an invite to disseminate the survey and the small number who agreed to do so, and we cannot account for individuals who chose not to answer the survey. For this reason, we do not claim full representation of all European psychiatrists. Other web-based surveys of PAP, however, had similar response rates[10,15] and our large sample size constitutes one of the study strengths. A final limitation is the question on the self-reported previous experience with PAP and psychedelic research. We initially intended to ask "Are you a psychedelic researcher?" but opted instead for a wider category that also allows people who may not have conducted clinical research but have intensely followed the scientific publications on this topic. We cannot delineate between these two, which partially limits the interpretation. However, both activities imply expertise in the subject and a deeper understanding of the issues related to the topic. Additionally, the classification of psychedelics in the knowledge test given to participants is somewhat limited in light of the lack of consensus on whether substances like MDMA and ketamine are considered to belong to the psychedelics group. Future uses of this test may either exclude these substances or choose to evaluate them differently.

Median APQ scores among psychiatrists were comparable to scores in the general population assessed in a previous study, both situated toward the middle of the APQ scale[16]. The sub-scale with the highest score was *Openness to Psychedelics*, and the lowest score was found for *Risk Assessment of Psychedelics*, quantifying the previous findings of mental health experts showing baseline openness to psychedelics and PAP, but also a significant degree of uncertainty and caution in regards to possible risks and side effects of psychedelic use[9,10,15]. Our previous survey of the general population found no difference between knowledge among healthcare workers of all specialties and laypersons[16]. However, the present sample of psychiatrists showed higher basic knowledge on psychedelics compared to these two groups. Methamphetamine and GHB were most often mistaken as psychedelics, which was a less concerning result than our survey of the Croatian general population, where participants, apart from methamphetamine, often considered substances such as heroin, methamphetamine, and opium to be psychedelics[16]. Overall, the findings related to knowledge align with what is expected based on psychiatrists' basic expertise in psychopharmacology[11]. Ketamine was the most polarized substance in terms of classification, where half of the participants classified it as a psychedelic. This finding points to a need of reaching a clear consensus about psychedelics' classification that will be widely used and accepted.

Our study is the first to demonstrate that past psychedelic use and personal experience with PAP and psychedelic research were both strongly associated with more positive attitudes on psychedelics, regardless of one's background and training in psychiatry. This is congruent with the well-established postulate that previous behaviour is the strongest predictive factor for attitudes[17]. However, this reinforces the previously described risks of bias and enthusiasm of treatment providers who have previously personally used psychedelics[5]. It also carries implications for previously recommended educational interventions on psychedelics[10,15,16], where it may be difficult to determine what is balanced and bias-free information. The association between higher knowledge and more positive attitudes on psychedelics raises into question whether individuals creating and providing such

interventions can remain neutral. Similarly, considering the stigma and historical controversies associated with psychedelics, significant bias could also be present among individuals who are poorly informed on psychedelics and PAP. Overall, negative bias towards psychedelics and PAP within the psychiatric profession could potentially reduce PAP uptake in practice, make practitioners less likely to recommend it to patients, and provide a point of resistance that may not be supported by real-world evidence. The association of male gender and younger age with more positive attitudes on psychedelics is also consistent with previous surveys[9,13,16]. However, our study saw that male gender was only associated with higher scores on the *Risk Assessment of Psychedelics* and *Legal Use of Psychedelics* sub-scales of the APQ, indicating that men may be less risk-averse towards psychedelics than females, which is consistent with previous findings in psychology[18] and also supported by the higher proportion of men in our sample who previously used psychedelics. Men also reported experience with PAP and psychedelic research more frequently, implying that they may engage more with resources and information related to psychedelics. Lower APQ among older participants could potentially be explained due to the effect of "war-on-drugs" propaganda from the 60s onwards, which had a negative focus on the side effects and dangers of psychedelics[19,20]. Additionally, the association of both spirituality and past use of psychedelics to more positive attitudes can be interpreted through what is known about psychedelic use changing one's beliefs to be more geared towards panpsychism, belief in reincarnation and the afterlife, and attributing consciousness to living and non-living entities[21–23].

Overall, this is the first validation of the APQ in English and in the psychiatrist population. Its metric characteristics are consistent with our initial validation study, which is encouraging for further application in this group[16]. These findings can serve as a reference point for all further surveys of psychiatrists with the APQ, which can explore culture- or nation-specific differences. The APQ can also be used in clinical trials of PAP to explore whether patients with higher APQ scores have better treatment outcomes. This could possibly quantify the expectancy bias known to be present among patients in such trials[24]. Considering the relatively high prevalence of previous psychedelic use we found among psychiatrists, future studies can explore the context in which it took place and whether some of it had the purpose of self-experimentation or self-treatment[25,26]. It would be useful to develop and validate a standardized knowledge test for psychedelics that goes beyond the recognition and classification of substances, since we found that median self-assessed knowledge on psychedelics was lower than the median score on a basic recognition-based test (56.0 vs. 86.0, both on a scale 0–100). When designing future educational interventions on psychedelics, it may be worthwhile to consider artificial intelligence-assisted education to avoid impartiality and bias. We also suggest a further exploration of gender differences in the perception of psychedelics, specifically in terms of how they engage with information on psychedelics or psychedelic research.

Methods

Study design and setting

This cross-sectional study used a web-based survey on the SurveyMonkey data collection platform (SurveyMonkey Inc., San Mateo, CA, USA). The study protocol was pre-registered on the Open Science Framework on April 5, 2022 (https://osf.io/upkv3).

Participants and data collection

Inclusion criteria for participation included being a psychiatry resident/specialist or psychiatry trainee and currently working in Europe. There were no specific exclusion criteria. A complete list of eligible countries is provided in the supplementary material. Participants were recruited by contacting psychiatrist organizations (all member organizations within the European Federation of Psychiatry Trainees and the European Psychiatric Associations), psychotherapeutic organizations, hospitals, and individual e-mails. Detailed information on sampling is available in the Supplementary Files. The data collection lasted from April 13, 2022 to March 5, 2023.

Survey

The survey was anonymous, in English, and consisted of three parts: demographic information, a basic knowledge on psychedelics test, and the 20-item APQ. Items of the knowledge test and the APQ were presented to the participants in a randomized order. The full survey is available in the Supplementary Files. The validation of the 20-item APQ and its properties were described in detail in a previous publication[16]. This paper also described a rationale for including and developing the test of basic knowledge on psychedelics, along with all information related to scoring[16].

Sample size

According to the information available at Eurostat, we estimated the number of psychiatrists in Europe to be 100000[27]. With a population of that size, a 5% margin of error, and a confidence level of 95%, we determined that we needed at least 383 participants to complete the survey. We aimed to collect at least 100 responses above the targeted sample size to safeguard against incomplete or invalid surveys. The sample size calculation was performed using the SurveyMonkey Sample Size Calculator[28].

Ethical aspects

The Ethics Committee of the University of Split School of Medicine in Croatia reviewed and approved the study protocol (document No. 2181-198-03-04-22-0019), as did the Jagiellonian University in Kraków, Poland (document No. 1072.6120.261.2022). The basic information about the study was provided at the entry screen, and the participants gave their informed consent by checking a box before moving to the survey. All responses were anonymous, and the survey in SurveyMonkey was set not to collect the IP addresses of participants. All methods were carried out in accordance with the Declaration of Helsinki.

Statistical analysis

The normality of data distribution for continuous variables was assessed using the Shapiro-Wilk test and the observation of Q-Q plots. Categorical variables were expressed as frequencies and percentages. Continuous variables were expressed using mean or median ± 95% confidence interval and standard deviation or interquartile range, depending on the data distribution. The response rate for the survey was defined as the number of participants who completed the survey divided by the total number of participants who accessed the survey. A web-based survey setting and our snowballing sampling technique did not allow insight into who received the link to the survey. We excluded all incomplete participant survey responses but not outliers, as these values may represent extremes in knowledge or attitudes within the sample population.

Since this was the first use of the APQ in this population and its first use in English, we validated the four-factor 20-item structure of the questionnaire in this sample using confirmatory factor analysis (CFA) and assessing the instrument's reliability. The CFA was performed using the diagonally weighted least squares (DWLS) estimation method with a polychoric correlation matrix. We used model fit index cut-offs to assess adequate model fit as defined by Hu and Bentler[29]. Root Mean Square Error of Approximation (RMSEA) was expressed using a 95% confidence interval (CI). We used McDonald's ω and a 95% CI to assess the reliability of the APQ (overall and for each sub-scale), where scores >0.70 were considered satisfactory.

We also estimated the correlation between APQ scores and scores on the basic knowledge test using Spearman's rho (ρ). We performed a stepwise linear regression analysis to assess the multiple associations between all collected demographic variables as predictors and the total APQ score and the score on each of its sub-scales as criterion variables, respectively. Results were expressed as standardized regression coefficients (β), *P* values, and adjusted coefficients of determination (R^2). Demographic data were compared between psychiatrists with no experience with psychedelic research or therapy and psychiatrists who self-reported previous experience with psychedelic research or therapy using the Mann–Whitney (continuous variables) and chi-square tests (categorical variables). To address attrition bias, we compared the demographic data of participants who completed the survey vs. those with incomplete surveys who provided their demographic information before dropping out.

Data availability

The dataset from this study and its corresponding data dictionary are freely available at the Open Science Framework, https://doi.org/https://doi.org/10.17605/OSF.IO/S52RV.

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Author contributions

MFŽ, DH and DD conceptualized the idea for the study and the methodological design. MFŽ, DH, DS, MK, and DD participated in the data collection. MFŽ analysed the data and then interpreted the findings together with DH. DH created the figures. MFŽ drafted the first version of the manuscript and all authors critically reviewed and revised the work. All authors agree to be accountable for all aspects of the study and its manuscript.

Competing interests

The authors declare no competing interests.

Additional information

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