

Novel psychoactive substances (NPS) – knowledge and experiences of drug users from Hungary, Poland, the UK and the USA

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Background: The recent decade witnessed growing prevalence of novel psychoactive substances (NPS) among young people in Europe and elsewhere. The study, conducted in 2011 as part of the EU-funded ReDNet project, aimed at better understanding of motives behind the demand for NPS among youth as well as at their information needs in this regard. In addition to historical values, the lessons learned during the legal status of NPS may contribute to a more general understanding of use of new drugs and to current drug policies. **Method:** A self-administered anonymous questionnaire on NPS was completed via internet among young people from Hungary, Poland, the United Kingdom and the United States (N=1353) when NPS in general still enjoyed legal status. **Results:** The majority of respondents (82%) used NPS in the last 12 months and approximately half of them experienced adverse effects from these substances. The most frequent motives behind NPS use were willingness to experiment with new substances. However, sense of security and confidence in their composition as legal products were also important drivers of their consumption. Desired psychoactive effects and risks associated with their use were rated as the two most vital pieces of information to improve their knowledge about NPS. **Conclusions:** There were some differences between participants representing different countries, however, the study also revealed many similarities, suggesting emergence of global youth consumption cultures, including NPS use. Provision of information on NPS, including their positive and negative effects, should play an important role in drug policies. Since the time of the study some qualities of NPS (such as confidence in their composition as well as quality and sense of security) may have deteriorated after delegalisation. On the other hand, opinions of NPS users suggest that delegalisation may have a deterrent effect for one third of their consumers while would not affect majority of them.

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INTRODUCTION

Consumption of novel psychoactive substances (NPS) also known as “legal highs”, has become substantial problem for drug policy, public health and research (Corazza et al. 2013; European Monitoring Centre for Drugs and Drug Addiction, [EMCDDA], 2017 A; Winstock & Wilkins, 2011). These substances have been distributed as legal substitutes of illicit drugs such as cannabis, amphetamine, cocaine, ecstasy or LSD (Corazza et al. 2011; Measham et al., 2010; Schifano et al., 2011). Health consequences related to consumption of the “classic” or “old” illicit drugs have been well described in literature. In contrast, the psychoactive substances that have recently emerged are poorly understood in the scientific literature and their specific effects and toxicity are not known to the clinicians (Corazza et al., 2012; Patterson et al., 2017).

Novel psychoactive substances appear on the market every week, have increasingly sophisticated forms, and can stay legal for longer. Initially, in response to the legal controls, new chemical structures were created, which might or might not present similar risks and remained legal until a new legislation was introduced to tackle them (Winstock & Wilkins, 2011). Those synthesising new substances and “cyber-entrepreneurs” distributing these substances over the internet used to be always a step ahead of the legislative efforts to control them (Measham et al., 2010). High rates of their appearance on the market were well shown by the results of three projects: Psychonaut Web Mapping System I–II (www.psychonautproject.eu) (Deluca et al., 2012) and ReDNet (www.rednetproject.eu) funded by the European Commission, which identified 650 new substances or their combinations (Corazza et al., 2013). Since then, according to EMCDDA several dozen NPS were identified every year, reaching a peak of approximately 100 in 2014 and 2015 (EMCDDA, 2015; EMCDDA, 2016). However, in the following years the number has fallen - to 51 in 2017 and 55 in 2018 (EMCDDA, 2018; EMCDDA, 2019). The causes of this fall are unclear, but may be the result of sustained efforts undertaken in Europe to control NPS and legislative initiatives in China, where the majority of NPS is produced (EMCDDA, 2019). In order to end the cat and mouse game, several European countries, including Poland and the UK, introduced several legal solutions such as generic legislation that prohibits possession and supply of whole families of drugs with no requirement to assess the risk of using individual substances or blanket prohibition, according to

which it is not allowed to produce, market, supply and possess substances with psychoactive properties, except those that have already been permitted, such as alcohol, tobacco, caffeine and registered medicines (Measham & Newcombe, 2017; Reuter & Pardo, 2016). It is worth adding that the pace at which changes were made in the legal regulations concerning NPS turned out to be a driving force in the development of new generations of NPS and retail innovations. For this reason, Fiona Measham and Russel Newcombe suggested that not “cat and mouse” but rather “hare and hounds” better describes the relationship between the NPS market and changes in the law (Measham & Newcombe, 2017).

Thanks to the internet NPS are widely distributed as it offers the ideal conditions for global trade, both through surface web as well as deep web, supported by technologies that allows to hide the identity of buyers and online vendors (EMCDDA, 2017 A). The internet facilitates direct contact between the customer and the seller, as well as receiving regular information about new products and forwarding this information to other people by e-mail or SMS. Against this backdrop, NPS and information on their effects are increasingly available to everyone. Novel psychoactive substances are traded via internet pages (Corazza et al., 2012; Corazza et al., 2013; EMCDDA, 2017 A) and via network of specialized street shops as it happened in Poland several years ago (Dąbrowska & Bujalski, 2013). Despite restrictions introduced in most countries that used to have legal or semi-legal NPS trade, they can still be available in physical shops but more covertly (EMCDDA, 2019). As scientific knowledge of NPS is limited and needs immediate updates, the researchers in the field have to utilise information and experiences on NPS collected and disseminated by their users (Corazza et al. 2011; Corazza et al. 2012; Corazza et al. 2013; Deluca et al., 2012; Schifano et al., 2011).

THE REDNET PROJECT

Rapid increase of NPS supply and easy internet access call for novel preventive measure initiatives. One of these was the ReDNet project that was implemented by eight countries: Belgium, Germany, Hungary, Italy, Norway, Poland, Spain, the United Kingdom already eight years ago when NPS were still legal. Its main aim was to improve access to reliable information on NPS and the potential risks associated with their use. The project targeted users and professionals working with the young people using NPS (Corazza et al., 2013).

One of the components of ReDNet project was a survey among young NPS users conducted in Hungary, Italy, Poland, Spain and the United Kingdom. The aim of this survey was to address the following research questions: 1) What motives can be identified behind reaching for new substances? 2) What information about new substances are regarded most useful for their users? 3) What are implications of legal status of new psychoactive substances?

Despite historical nature of the data, all these questions are relevant in a context of current drug policies and vibrant drug markets which still offer great variety of new substances.

METHODS

Sampling and data collection procedure

This paper is based on the self-report data taken in 2011 from a sample of young drug users, who had experience with NPS. The respondents were recruited through the ReDNet project's website and through internet forums, such as *Bluelight*, devoted to exchange of information and experiences on drugs, including NPS. The participants answered the self-administered questionnaire via the internet. They were informed about the voluntary and anonymous nature of their involvement as well as purpose and practical value of the study. The questionnaire was available in English, Hungarian, Italian, Spanish and Polish. Preliminary analysis showed that among Italian and Spanish respondents, less than 10% confirmed any experiences with NPS. Therefore, these countries have not been included in further analysis.

Initially, 2117 respondents were included. However, due to incomplete data or answers indicating that respondents did not take the study seriously (such as jokes and inconsistent responses), data of 25 participants were removed from the sample. Moreover, respondents who had no experience with NPS or refused to answer question on such substances use, were excluded (N=463; 22%). The English version of the questionnaire was addressed to the UK respondents. However, it was also filled in by a substantial number of persons from other English speaking countries, such as Australia, Canada, Ireland, and above all, the USA. Moreover, some questionnaires in English were filled in by single respondents from around the world – for example from: Argentina, Czech Republic, Chile, Denmark, Germany, Peru, Sweden, the Netherlands. These participants (N=99) as well as Australian, Canadian

and Irish (N=67) and those who did not answer the question on country of origin (N=110) were excluded from the analysis. The respondents from the USA will constitute a distinct group in further analyses in addition to the respondents from Hungary, Poland and the UK.

Thus, our final sample was 1353. The mean age was 21.7 years (SD=4.52). Males constituted 87% of the respondents.

Measures

Most of the measures used in the study were elaborated in English by the ReDNet team and subsequently translated into Hungarian and Polish. The questionnaire consisted of 27 questions related, among others to the following themes:

- NPS and other drug use among respondents. First, the respondents were asked if they have heard of such “legal highs” as GBL, GHB, benzylpiperazine/BZP, spice (JWH-018, herbal smoke), MDVP, methedrone, salvia divinorum etc or knew someone who used them. All together the list consisted of names of 16 NPS. Then the participants were to report their own experiences with NPS, key factors in onset of NPS as well as adverse effects related to NPS use. The questionnaire ended with a question about “classic” illegal drug use.
- Importance of knowledge on NPS. Three items were related to importance of acquiring knowledge on specific characteristics of NPS and preferred channels of information.
- Envisaged impact of delegalisation. A question “how would a change in the law would affect your use of legal highs?” was to explore opinions of NPS consumers if delegalisation would diminish their NPS use, make users to stop their use or have no impact whatsoever.

Demographic data

Demographic information, such as gender, age, employment and education were also requested.

For all questions the respondents had the option to answer: “prefer not to say”.

Ethical issues

This research project was approved by the Bioethical Committee affiliated to the Institute of Psychiatry and Neurology in Warsaw, Poland; the Institutional Review Board of the Faculty of Education and

Table 1. Descriptive information on the study population

Descriptive information Frequency (%)	Hungary (N=296)	Poland (N= 552)	United Kingdom (N=207)	USA (N=298)	Total (N=1353)
Gender					
Male	259 (87.5%)	480 (87.0%)	167 (80.7%)	264 (88.6%)	1170 (86.5%)
Female	31 (10.5%)	61 (11.1%)	35 (16.9%)	29 (9.7%)	156 (11.5%)
Other	1 (0.3%)	1 (0.2%)	1 (0.5%)	2 (0.7%)	5 (0.4%)
'Prefer not to say' or missing value	5 (1.7%)	10 (1.8%)	4 (1.9%)	3 (1.0%)	22 (1.6%)
Mean age	22.6 (SD=4.97)	22.4 (SD=4.46)	21.2 (SD=4.75)	19.8 (SD=3.29)	21.7 (SD=4.52)
Employment					
Student	162 (54.7%)	268 (48.6%)	128 (61.8%)	172 (57.7%)	730 (54.0%)
Full-time job or part-time job	84 (28.4%)	170 (30.8%)	50 (24.2%)	76 (25.5%)	380 (28.1%)
Unemployed or unable to work	36 (12.2%)	63 (11.4%)	25 (12.1 %)	40 (13.4)	164 (12.1%)
'Prefer not to say' or missing value	14 (4.7%)	51 (9.2%)	4 (1.9%)	10 (3.4%)	79 (5.8%)
Education					
University degree	42 (14.2%)	164 (29.7%)	57 (27.6%)	70 (23.5%)	333 (24.6%)
'Prefer not to say' or missing value	11 (3.7%)	30 (5.4%)	7 (3.4%)	60 (20.1%)	106 (8.0%)

Table 2. Substance use among respondents

	Hungary (N=296)	Poland (N= 552)	United Kingdom (N=207)	USA (N=298)	Total (N=1353)
NPS use during the last 12 months	262 (92.3%)	365 (68.1%)	175 (86.6%)	274 (94.5%)	1076 (82.0%)
NPS use during the last 30 days	174 (60.4%)	200 (37.9%)	113 (56.2%)	183 (64.2%)	670 (51.5%)
Mean age of NPS use onset	20.5 (SD=4.92)	19.2 (SD=4.16)	17.7 (SD=4.09)	17.4 (SD=2.79)	18.8 (SD=4.22)
Illegal substance use	189 (71.6%)	445 (89.2%)	175 (88.8%)	255 (89.5%)	1074 (85.5%)

Missing values ranged from 2.4% to 10.8%

Psychology, Eötvös Loránd University in Hungary; and King's College London, UK - Psychiatry, Nursing & Midwifery Research Ethics Subcommittee (ref num PNM/10/11-85).

Statistical procedures

One Way ANOVA and chi-square was used to test the differences between countries.

RESULTS

Study population

As shown in a table 1 the biggest fraction of respondents (over 500) came from Poland while in three other countries the number of respondents varied between 200 and 300. Men constituted 87% of the sample. In the UK, however, the proportion of women reached

almost 17% comparing to no more than 11% in the remaining countries. There was no significant difference as regards to occupational status with over half of respondents in all countries being students, above a quarter employed, and approximately 12% unemployed or unable to work. One quarter of the study participants reported university education that ranged between 30% (Poland) and 14% (Hungary).

Participants' experiences related to NPS use

In general, responders from different countries were more similar than different as regards to experiments with NPS (Table 2). Following the inclusion criteria, all participants used NPS at least once in their lifetime. Mean age of onset varied from 17.4 to 20.4 years. Most of them used NPS during the last 12 months, while approximately 50% of respondents used these substances frequently, i.e. during the last 30 days. NPS

Table 3. Negative consequences of NPS use

	Hungary (N=296)	Poland (N= 552)	United Kingdom (N=207)	USA (N=298)	Total (N=1353)
A significant negative reaction to any NPS	161 (56.5%)	339 (63.1%)	70 (34.8%)	126 (43.4%)	696 (53.0%)
Contact with mental health services due to use of NPS	16 (5.6%)	49 (9.2%)	12 (6.1%)	21 (7.4%)	98 (7.5%)
Hospital/A&E attendance for reasons linked to use of NPS	17 (5.9%)	33 (6.1%)	18 (9.0%)	20 (6.9%)	88 (6.7%)
Contact with specialist drug treatment services due to use of NPS	13 (4.6%)	22 (4.1%)	6 (3.0%)	10 (3.5%)	51 (3.9%)
Any contact with health services due to NPS use	22 (8.0%)	65 (12.6%)	25 (13.0%)	30 (10.8%)	142 (11.2%)

Missing values ranged from 2.4% to 6.8%

use during the last 12 months and the last 30 days were less prevalent among participants from Poland than in the other countries and these differences were statistically significant ($p < 0.001$). There was no statistical difference between Hungary and the USA. However, in comparison to respondents from the UK, significantly more participants from Hungary ($p < 0.05$) and the USA ($p < 0.01$) used NPS during the last 12 months. Most of the study participants (85.5%) reported experiences with other illegal drugs with the exception of Hungary, where 72% had such experiences.

Most of the NPS users (69%) highly rated their experiences with NPS (mean value on 5-point scale=4.07; SD=0.99) and only 30% were concerned about the long-term effects of NPS (data not presented in table). Respondents from the UK reported the highest satisfaction of NPS ($M=4.26$; $SD=0.87$), followed by respondents from the USA ($M=3.94$; $SD=1.04$), from Poland ($M=3.74$; $SD=0.91$), and eventually from Hungary ($M=3.50$; $SD=1.03$). Bonferroni post-hoc analysis showed that all differences between countries were statistically significant.

Despite these positive opinions, approximately half of the respondents experienced significant negative reaction to NPS, though these negative reactions occurred less frequently among participants from the UK and the USA (35%-43%) compared to Poland and Hungary (63%-57%). Differences between the UK compared to the USA as well as between Hungary compared to Poland were insignificant. Contact with health care system due to NPS use was endorsed by a minority (11%) of respondents while contact with specialised drug services about four percent.

There was no statistically significant differences across countries (Table 3).

Motives behind the NPS onset

The most important factor in onset of NPS use was willingness to experience new drugs, followed by confidence in product's composition, easy access to NPS, good review from other people, affordability, legality and limited access to other drugs. Bonferroni post-hoc analysis indicated that for participants from the UK (as well as from the USA) willingness to experience new drugs was significantly more important than for participants from Poland (mean difference=-0.41, $p < 0.001$) and Hungary (mean difference=-1.27, $p < 0.001$). For Hungarian respondents, confidence in product and affordability were two most important factors, followed by easy access and legality. For Polish respondents, willingness to experience new drug was the primary factor followed by easy access, legality and confidence in product's composition. For respondents from the UK, besides willingness to experience new drug, most important factors were confidence in product's composition, easy access and good review by other users. Finally, for participants from the USA the most important factors were willingness to experience a new drug, good review and affordability. Compared to the remaining countries low probability of being detected by urine tests was more important for participants from the USA (table 4).

The beliefs that NPS are safer and less side-effects generating than illicit drugs, as well as social acceptability of NPS and curiosity caused by media coverage were much less important factors for all

Table 4. Key factors in the onset of NPS

	Hungary (N=296)	Poland (N= 552)	United Kingdom (N=207)	USA (N=298)	Total (N=1353)	One Way ANOVA F
	<i>Mean value on 5-point scale 1 "not important" to 5 "very important"</i>					
Willingness to experience new drugs	2.96	3.83	4.24	4.22	3.79	59.60***
Confidence in product's composition	3.85	3.49	3.93	3.68	3.67	6.90***
Easy access – possibility to buy online	3.29	3.79	3.80	3.68	3.66	9.66***
Good "review" from other people	2.73	3.22	3.79	3.83	3.34	43.96***
Affordability	3.47	3.01	3.45	3.73	3.33	20.37***
Legality - no risk of police arrest	3.27	3.51	3.16	3.13	3.32	5.21***
Limited access to other drugs	2.58	3.19	3.00	3.19	3.03	11.26***
Better purity of NPS compared to illicit drugs	2.61	2.98	3.15	2.88	2.90	5.75***
Better high than illicit drugs	2.22	2.21	2.72	2.60	2.38	11.12***
Less easily detected by urine screens	2.10	2.31	1.84	3.18	2.38	40.38***
Less easily sniffed by dogs	1.82	2.34	2.02	2.40	2.19	11.47***

*** p<0.001

Table 5. Demand for information. Importance of particular characteristics of NPS

	<i>Mean value on 5-point scale (from 1 not important to 5 very important)</i>					
	Hungary (N=296)	Poland (N= 552)	United Kingdom (N=207)	USA (N=298)	Total (N=1353)	One Way ANOVA F
Desired psychoactive effect	4.81	4.80	4.84	4.82	4.82	0.83
Risk of use	4.61	4.55	4.63	4.57	4.58	0.61
Overview/key points	4.65	4.42	4.44	4.38	4.46	5.24***
Modalities of use	4.03	4.15	4.28	4.26	4.17	3.00*
Price	3.49	3.72	3.44	3.44	3.56	4.48**
Appearance	3.73	3.17	3.36	3.39	3.37	10.68***
Marketing strategies	3.40	3.33	3.28	3.42	3.36	0.66
Legal status	3.37	3.18	3.13	3.35	3.25	1.67

*p<0.05; ** p<0.01; *** p<0.001

participants. No differences between countries were identified in this regard (data on these factors are not presented in table).

Information about NPS regarded as most useful for their users

Approximately half of our respondents were interested in receiving up-to-date information on NPS, however, the participants from the UK (47%) and the USA (45%) were less interested in receiving such information than respondents from Hungary (75%) and Poland (67%). The most preferred source

of receiving up-to-date information were e-mail and websites (data not presented in table).

The most important pieces of information about NPS characteristic were: desired psychoactive effect and risks of use. Table 5 reports results of one-way ANOVA. It was found that three kinds of information: overview/key points, modalities of use, appearance and price significantly differ by the country. Bonferroni post-hoc analysis indicated that the participants from Hungary perceived as more important overview (or key points) compared to the respondents from Poland (mean difference=0.23; p<0.01) and from the USA (mean difference=0.26;

Table 6. Envisaged impact of changing the law on NPS use

	Hungary (N=296)	Poland (N = 552)	United Kingdom (N= 207)	USA (N=298)	Total (N= 1353)
I would use more often	8 (2.9%)	23 (4.4%)	4 (2.1%)	10 (3.5%)	45 (3.5%)
It would not affect my use	173 (63.4%)	288 (55.5%)	132 (68.4%)	147 (51.8%)	740 (58.3%)
I would use less often	50 (18.3%)	107 (20.6%)	47 (24.4%)	74 (26.1%)	278 (21.9%)
I would stop	42 (15.4%)	101 (19.5%)	10 (5.2%)	53 (18.7%)	206 (16.2%)

Missing values ranged from 4.7% to 7.8%

$p < 0.01$). Information on appearance of NPS was also more important for the Hungarian respondents than for participants from Poland (mean difference=0.56; $p < 0.001$), the UK (mean difference=0.37, $p < 0.05$) and the USA (mean difference=0.34; $p < 0.05$). The participants from Poland perceived as more important information about price, especially in comparison to the respondents from the UK and the USA (mean difference =0.28; $p < 0.05$).

Implications of legal status

In all countries more than a half (58%) of the drug users claimed that a change in the law toward criminalization of NPS would not affect their NPS use, one fifth (22%) would use these substances less often while one in six would give up their use. The change of law seems to have no effect on two thirds of respondents from the UK and Hungary and approximately half of the participants from Poland and the USA. Differences in this regard between these two pairs of countries, i.e. Hungary + the UK and Poland + the USA are statistically significant ($p < 0.01$). The proportion of respondents who would stop NPS use in response to their delegalisation varied from 5% in the UK to 15% in Hungary to almost 20% in Poland and the USA. In this case, respondents from the UK differed significantly from participants from other countries ($p < 0.001$) (table 6).

DISCUSSION

Experience with NPS

The study found more similarities than differences across participants from different countries, which suggests they belong to an international NPS culture that has a few national specificities. The prevalence

of using the "classic" drugs and NPS among our respondents from all participating countries was significantly higher than in the case of the so-called "the general population", traditionally covered by the epidemiological studies. The European School Survey Project on Alcohol and Other Drugs (ESPAD) study from 2015 shows that lifetime prevalence of NPS was about 4% (ranged from 1% to 10%) among 15-16 year-olds, while the last year prevalence was about 3% (Kraus et al., 2015). Similar results were obtained in the Eurobarometer 2015, which was conducted among 15-24 year-olds in the 28 European Union countries (Eurobarometer, 2015). It turned out that about 8% of young people in that age consumed NPS at least once in their lives, while the last year prevalence was about 3%. In 2011, when ReDNet project was conducted, the use of NPS was confirmed by 5% of Eurobarometer respondents aged 15-24, including 8% from the UK, 9% from Poland and only 2% from Hungary (Eurobarometer, 2011). In the ReDNet study the majority of respondents used NPS during the last at 12 months, which is obviously due to project recruitment strategy, i.e. via drug forums. However, Polish participants of the ReDNet study consumed NPS less frequently compared with Hungary, the UK and the USA. On the other hand, the participants from Poland as often as other respondents, especially from the UK and the USA, have confirmed the use of the "classic" drugs.

About half of the respondents experienced a significant negative reaction to NPS. Our results are corroborated by other studies conducted few years later. In a survey from 2016 among online community samples in 6 European countries, including Poland and Hungary, it was found that 51% of respondents had experienced acute unpleasant side effects after NPS use (Van Hout et al., 2018). In our study, participants from Hungary used NPS as often as

participants from the UK and the USA, but the highest percentage of Hungarian respondents (and Polish participants) has confirmed a significant negative reaction to any NPS. This result was reflected in the data on the overall assessment of the NPS experience, which was the lowest in the case of the Hungarian respondents. These results suggest that quality of NPS available on Hungary and Poland is lower compared to the UK and the US which are much more affluent and where consumers may demand better product and more comprehensive information. Drug markets seem not to be exception in this regard and depend on more general economic factors. Despite the fact that more than half of the respondents from Hungary had negative experiences with NPS, the prevalence of use of these substances in this group was high and did not differ significantly from the prevalence among participants in the UK and the USA, who less frequently reported negative reaction to NPS and gave relatively high rating of their experience with these substances. The ReDNet results indicate that negative experiences do not motivate NPS users to stop using drugs or to seek professional help. Moreover, our data showed substantially low level of treatment coverage as only few percent of respondents reported use of specialized drug treatment.

Motives behind reaching for new psychoactive substances

The highest rated motive to reach for NPS was the desire to experiment with new substances. This finding is supported by numerous studies that have shown that sensation seeking is an important factor when people engage in risky behaviors (Griffin et al., 2003; Willoughby et al., 2007; Van Dorn et al., 2008). Moreover, other studies on NPS also showed that curiosity is the reason most frequently mentioned by NPS users (Sumnall et al., 2013, McLeod et al., 2016; Soussan et al., 2018). Safety considerations, both health (better purity, less side effects) and legal (small possibility of detecting the presence of NPS in urine tests or by police dogs, and even the risk of arrest) were less important for our participants. A study conducted in Ireland also indicated that the possibility of being detected in drug screenings or by sniffer dogs does not seem to influence the decision to reach for these substances or not (Sumnall et al., 2013). Conversely, the study confirms that the legality of NPS is an important motivating factor for using these substances (Measham et al., 2010; Measham, 2013; Sumnall et al., 2013; Soussan et al., 2018). However,

legal status of NPS is more important for people who due to their occupation, being in drug treatment or contact with the criminal justice system can expect drug testing (Mesham & Newcombe, 2017).

An important motive for using NPS was the confidence in their composition. This was also found to be important in other studies (Sumnall et al., 2013; Soussan et al., 2018). It can be assumed that this certainty resulted from the legal or para-legal status of these substances, which suggests that NPS are chemically tested as any other legal substances. Thus, legal status could have an impact on the dissemination of the use of new substances, providing consumers with a greater sense of security (Measham, 2013). Substantial quality deterioration of "classic" illicit substances combined with their growing prices was recognized as one of the reasons for the rapid growth of the supply of and demand for new substances (Measham et al., 2010; Measham, 2013).

Since delegalisation of NPS in majority of countries in point, some advantages of their use may have disappeared as confidence in their composition and quality. In fact, there are more and more reports about rapid deterioration of NPS quality and serious adverse events, such as overdose, deaths and infections associated with such substances use (EMCDDA, 2017 B).

The study participants were interested in receiving up-to-date information on NPS provided via e-mail and websites. Unfortunately, as it is reported by EMCDDA, novel psychoactive substances appear on the market every week (EMCDDA, 2019). Gathering up reliable knowledge about the effects and consequences of using psychoactive substances takes time, so research of this issue has no chance to keep up with NPS manufacturers. In this situation, NPS consumers may be an important source of information for the researchers (Corazza et al. 2011; Corazza et al., 2012; Corazza et al., 2013; Deluca et al., 2012; Schifano et al., 2011). It should be remembered, however, that most NPS users do not know the actual composition and potency of substances they reach for (Patterson et al., 2017).

The possibility of buying NPS over the internet greatly facilitates access to these substances. Undoubtedly, as indicated by numerous studies, easy accessibility is an important risk factor for use of psychoactive substances (Measham et al., 2010, Measham, 2013; Measham & Newcombe, 2017). Moreover, the Internet has become an important driver for the markets in general, including development of the NPS and drug markets, both directly through the sale of these substances via surface or deep web as well as

indirectly, because it allows manufacturers easy access to research and pharmaceutical data and creates forum to exchange information and experiences for potential users (EMCDDA, 2015). On the other hand, the novel digital interventions ('apps') are increasingly used to provide prevention and harm-reduction programs, treatment delivery as well as supervision and monitoring of patients (EMCDDA, 2019). Study conducted recently by EMCDDA showed, however, that only few of mobile or m-health apps have been evaluated, quality standard were lacking and there were concerns about the proper protection of personal data (EMCDDA, 2019).

The least important motive for our respondents was greater social acceptance for NPS, some of which had (or still has) the status of legal substances. However, this disregard of social acceptance is not surprising since NPS users, as well as users of "classic" illicit drugs, constitute a large part of those who challenge social norms and expectations (Donovan et al., 1991).

Analysis of the differences between respondents from different countries on motives showed that, contrary to the majority of the respondents, who were most interested in experimenting with the new substances, the Hungarian respondents rated as the first choice their confidence in NPS composition. On the other hand, the Hungarians less than the others assessed the importance of recommendation from other NPS users. Also, the issue of access to NPS via internet was far less important for the Hungarians than for the other respondents, in particular those from Poland and the USA. Moreover, the participants from Hungary significantly underestimated the importance of such reasons for using NPS as limited access to other drugs.

The study participants from Poland were much less likely than the other respondents to use NPS, while the highest percentage confirmed a significant negative reaction to them. Probably because of this, the respondents from Poland, similarly to the Hungarians estimated their experiences with NPS relatively lower. As in the case of the UK and the USA, in Poland the most important motive for reaching for NPS was the desire to experiment with new substances. On the other hand, the legal status of these substances and the resulting lack of risk of police arrest were considerably more significant for Polish participants than for the other respondents.

Respondents from the UK, as opposed to Poles and Hungarians, paid much more attention to effects of NPS, which means that these substances produce better effects than "illicit drugs". The good reviews

from other people were also of great importance to select particular NPS both for participants from the UK and the USA.

In contrast, for respondents from the USA a more important factor was lower detectability, i.e. lesser risk to be detected by urine tests and by sniffing dogs which is well understood considering the particularly repressive drug policy there.

In general, respondents from Hungary and Poland seem to be less satisfied and have more negative experiences with NPS compared with the remaining English speaking respondents. They also rely less on the opinions of other NPS users. It could be related to the worse quality of NPS available as well as the participants' lower linguistic competence. The latter may also be reflected by their poorer access to information and higher information needs.

The most useful information about NPS, which the participants looked for, were the desired psychoactive effects and the adverse effects of using these substances. Respondents also expressed an interest in the general description of the substances and their key characteristics including modalities of use. Information about price, appearance, marketing strategies, and legal status proved less relevant for participants. In other words, young people are looking for concise messages that will allow them to make an account of the possible benefits and possible losses associated with reaching for new substances – with health and safety risks rather than financial losses appearing to be more important. Interestingly, there were not so many differences between respondents from different countries in this regard suggesting emergence of global youth consumption culture which formulates similar demands and expectations.

Implications of legal status

Legal status of NPS offers their consumers a sense of security not only in terms of lower risk of legal sanctions but also in terms of confidence in the composition of the drug and its quality.

However, our study confirms general assumptions of contemporary drug policies that criminalisation of drugs have deterrent effect and discourages some people to use drugs. Despite majority who claims that delegalisation of NPS would not affect their consumption about one third would either reduce their consumption or would give up their use. It is also worth emphasizing that delegalization of NPS may have another effect because in response to legal sanctions manufacturers are introducing new

substances to the market. Taking into account that the most important motive for reaching for the NPS is the desire to experiment with new, previously unknown substances, the prohibition policy provides some of the users with new opportunities (Soussan et al., 2018).

Limitations of the study

No random sample of respondents was used as we aimed to recruit a relatively large group of NPS consumers, who are difficult to reach. The majority of respondents were visitors to the online forums devoted to the exchange of information on new psychoactive substances. The prevalence of the use in this group, their knowledge and experience seem to be significantly higher than among other teenagers and young adults.

CONCLUSIONS

Novel psychoactive substance use is an important public health problem. This is indicated by the high percentage of respondents who have experienced the negative consequences of using NPS. In addition to legal measures, information should play an important role in drug policies towards NPS, which, on the one hand, may discourage some potential consumers and, on the other hand, reduce harm to those who use it.

Users of the new substances are very diverse in terms of experience and knowledge of the psychoactive substances. Among them are those who look for new experiences and are very likely to take risks despite very extensive knowledge of the psychoactive substances. Information activities should take into account the specificity of these recipients. On the other hand, the informational needs of young people are largely similar, regardless of their experience, and include the expected effects of these substances, particularly the side effects. The results of the study confirm the initial assumptions of the ReDNet project, according to which the knowledge transfer of the new substances should be reliable, well documented and address both: reducing demand and reducing harm.

Moreover, the study which was completed in the 'golden period' of NPS as legal compounds reminds us that their legal status increased a sense of security among their consumers including confidence in their quality and composition which prevented some side-effects of their use. After delegalisation, those advantages may have disappeared as their quality rapidly deteriorated and health and social risks increased.

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Új pszichoaktív szerek (ÚPSz) – magyarországi, lengyel, egyesült királyságbeli és amerikai droghasználók tudása és tapasztalatai

Háttér: Az elmúlt évtizedben az új pszichoaktív szerek (ÚPSz) növekvő előfordulását tapasztalhattuk Európában és azon kívül is. Jelen kutatás, mely 2011-ben készült az EU által támogatott ReDNet projekt keretében, az ÚPSz-ek használatának motivációt kívánta feltárni fiatalok körében, valamint az ezzel kapcsolatos információs szükségleteket. A történeti szempontok mellett az ÚPSz-ek jobb megértése a jogi környezet változása mellett hozzájárulhat a hatékonyabb drogpolitikák kialakításához is. **Módszer:** Magyar, lengyel, egyesült királyságbeli és amerikai (N = 1353) fiatalok töltöttek ki egy anonim, önkitöltős kérdőívet, online felületen, amikor az ÚPSz-ek még legálisak voltak. **Eredmények:** A válaszolók többsége (82%) az elmúlt hónap során használt ÚPSz-t és mintegy felük tapasztalt kellemetlen hatásokat a használatával kapcsolatban. Az ÚPSz-ek használata mögötti leggyakoribb motiváció az új szerekkel való kísérletezésre való hajlam volt. Mindazonáltal a biztonságérzet és a szerekkel mint legális termékekkel kapcsolatos bizalom szintén fontos okok voltak a használat hátterében. A két legfontosabb információ a szerekkel kapcsolatban a vágyott pszichoaktív hatás és a használatával kapcsolatos kockázatok megismerése volt. **Következtetések:** Az egyes országok között mutatkoztak bizonyos különbségek, bár jelentős hasonlóságok is, amelyek a használati kultúra jelentős globalizációját jelezték. Az eredmények alapján az ÚPSz-ekkel kapcsolatos információnyújtás, beleértve ezek pozitív és negatív hatásait, a hatékony drogpolitika része kell, hogy legyen. A kutatás elvégzése óta néhány megítélés (így például a legalitásuk okán a szerekbe vetett bizalom) változhatott a szerek legális státuszának megváltozása következtében. Másrészt, a használók véleményei alapján feltételezhetjük, hogy míg egyharmaduk esetében a legális státusz változásának lehet elrettentő hatása, addig a többségnél ez a hatás nem várható.

Kulcsszavak: új pszichoaktív szerek, drogok, addikció, delegalizálás, nemzetközi vizsgálat