

# **Tobacco smoking in adults with moderate and severe intellectual disabilities in institutional accommodation and supported housing**

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## **Abstract**

*Introduction.* Previous studies that have addressed this issue in marginalized social groups have, as a rule, neglected ID respondents. Some research shows that the prevalence of smoking is higher in people with IDs compared to the general population, while there are also papers that report that people with IDs smoke three to four times less often than neurotypical subjects, along with papers that speak in favour of equal representation in relation to the general population.

*The aim* of this study was to determine the prevalence and characteristics of smoking habits among users of accommodation for people with IDs within social protection services.

*Method.* This pilot cross-sectional study was conducted during the months of January and February of 2021. A suitable sample consisted of 163 adults with a diagnosis of moderate or severe ID aged  $52.34 \pm 11.1$  (50.9% were men and 49.1% were women). The Fagerström Test for Nicotine Dependence was used to assess the degree of nicotine dependence of smokers, while functional efficiency was assessed with the help of the standardized functional efficiency rating scale.

*Results.* The research showed that adults with moderate IDs and severe IDs in homes and supported housing show a significantly higher prevalence of smoking compared to the neurotypical population. The occurrence of smoking is significantly related to the degree of ID ( $\chi^2=16,591$ ;  $df=$ ;  $rC=0,32$ ;  $p<0.01$ ), and the tendency to use tobacco increases with the increased general level of functional efficiency of persons with IDs, but also some parameters such as the degree of mobility ( $p<0.05$ ) or the domain of functioning in the social environment ( $p<0.05$ ).

*Conclusion.* The obtained results suggest that moderate and severe IDs in persons who are institutionalized or live with support are a risk factor for consuming tobacco products. Almost half of the people with moderate IDs and severe IDs are severe nicotine addicts.

## **Introduction**

Tobacco consumption is one of the leading causes of death worldwide (Jha, 2009; WHO, 2018) and accordingly, certain social groups are more susceptible to nicotine addiction and to passive smoking (NIH, 2006). The prevalence of smoking in marginalized social groups, within the prison population for instance, is exceedingly above the world average (Awofeso, 2001; Belcher, Butler, Richmond, Wodak & Wilhelm, 2006). Although people with intellectual disabilities (ID) themselves belong to a marginalized social group, which is disproportionately affected by the health repercussions of smoking, they are often neglected and frequently overlooked in the research of these population groups (Eisenbaum, 2018). It is a reliable fact that people with mental health difficulties consume tobacco products more frequently (Lasser et al., 2000), and this category, at least in part, includes people with IDs who already have poorer health outcomes (Emerson & Hatton, 2014). In these cases, even occasional smoking can result in an increase in tobacco-induced morbidity but also mortality (Coghlan, Lawrence, Holman & Jablensky, 2001). It is not a rare occurrence that smoking, even passive smoking, increases the possibility of contracting many diseases, some of which at first glance do not even seem closely related to this habit, such as otitis media (May & Kennedy, 2010).

In addition to numerous diseases, an additional problem in the population with a lower degree of adaptive abilities is the fact that smoking has a negative impact on some already weak components of functioning such as attention deficits, working memory, or impulse control (Wagner et al., 2012). In contrast, some authors mention the facilitatory effects of nicotine on working memory functions (Grundey et al., 2015), but it should be noted that in this study changes were observed only in nicotine addicts, while non-smokers did not experience any such effect.

Given that people with intellectual disabilities are a risk group for the consumption of tobacco products, which consequently leads to serious health consequences, it is of great importance to implement adequate and effective programs for the prevention of smoking habits in that population (Hymowitz, Jaffe, Gupta, & Feuerman, 1997). Successful prevention programs of this type are the result of well-organized social policies. Kerr, Lawrence, Middleton, Fitzsimmons & Darbyshire (2016) note that, in addition to prevention as one of the environmental factors, personal variables in this context should not be disregarded. Under personal effects on the occurrence of smoking, they list a number of determinants such as knowledge about the health repercussions related to nicotine addiction, self-efficacy,

motivation, ways of "coping" with challenging situations, anxiety, depression, and many others. The authors include family influences in the environmental factors, but also involvement in the processes of health, educational and social support as prevention modalities.

However, Tyler and Bourget (1997) point to an almost ironic fact in relation to the aforementioned need to prevent such habits, and that is that tobacco is often offered as a reward for people with IDs (Tyler & Bourget, 1997). A similar issue is mentioned by Minihan (2005), describing that within institutions, persons with IDs are often encouraged to smoke. The same author, a few years earlier, established by the observation that the occurrence of nicotine addiction is precisely the result of giving cigarettes to persons with IDs as a reinforcer during behavioural conditioning in institutional environments (Minihan, 1999).

The issue of researching nicotine dependence in people with IDs is challenging already in the initial phase due to the lack of precise data on the number and distribution of people with IDs, especially those with a mild degree of IDs (Emerson, 2011). Even the rare studies in this field also face a number of limitations in finding the exact prevalence of smoking, since a limited number of studies have published rather heterogeneous data, considering the severity of the disorder or the living arrangement of the respondents (Taylor et al., 2004). Regardless of how well designed they were, small-scale studies are unlikely to be appropriate for generating large-scale data or population-based surveys (Horwitz, Kerker, Owens & Zigler, 2000).

What can generally be accepted as a fact is that smoking is indeed a frequent activity for people with IDs (Singh et al., 2011). True, some studies show that prevalence is almost five times lower in this population (Eisenbaum, 2018; Lewis, Lewis, Leake, King & Lindemann, 2002; Taylor et al., 2004), with inconsistent percentages varying each year, usually ranging between 7% and 8% for the previous two decades (Eisenbaum, 2018).

Other studies suggest that the prevalence of smoking is similar to the one in the general population (Hymowitz, Jaffe, Gupta & Feuerman, 1997; Kerr, Middleton, Darbyshire, Lawrence & Fitzsimmons, 2010). Such results are also stated in the study by Burtner, Wakham, McNeal and Garvey (1995) where the prevalence of smoking is 20.5%, but in this study, 83% of respondents were functioning at a level of high IDs. With a high level of IDs, there is a low probability of fulfilling even the most basic assumptions in terms of motor, adaptive, and especially social skills that would be the basis for consuming tobacco as an act. Indeed, the consumption of tobacco products seems to correspond with the degree of intellectual functioning, and so smokers with mild and moderate IDs smoke more often than people with severe or profound disabilities (Robertson et al., 2000). In general, the smoking rate in severe

and moderate IDs is relatively low (<10%) and increases to as much as 30-37% as Hymowitz et al (1997) noted in the moderately and borderline disabled.

In respondents with borderline IQ and mild ID, there is a mention of the possibility that the frequency of smoking is twice as high than the average (Hymowitz et al., 1997; Tracy & Hoksen 1997; Van der Nagel et al., 2017) especially in those who do not have access to services for persons with IDs, who live with someone who smokes or are users of institutional accommodation (Whitaker & Hughes, 2003; Robertson et al., 2000; Hymowitz et. al 1997; Rimmer, Braddock & Fujiura, 1994; Rimmer, Braddock & Marks, 1995; Tracy & Hoksen 1997; Emerson, 2011). There is a broad consensus that there are more men smokers with IDs than women (Rimmer et al., 1994; Rimmer et al., 1995; Robertson et al., 2000; Taylor, Standen, Cutajar, Fox & Wilson, 2004).

It is also believed that people with mild and moderate IDs who severely abuse alcohol are more likely to become smokers than those who consume alcohol to a lesser extent, which corresponds to average global values (Dawson, 2000). A higher rate of tobacco consumption was also recorded among respondents with IDs who are parents (Emerson & Brigham, 2013).

The occurrence of smoking in people with IDs can be encountered as early as with adolescents in special schools where the first contact with psychoactive substances is made (Emerson & Turnbull, 2005). Thus, in the school system, about 5% smoke until the age of 12, that share reaches 15-17% by the age of 14, while from the age of 18, the prevalence of tobacco use increases by up to 30% (Gress & Boss, 1996). One Greek study reported a prevalence of smoking in the mildly intellectually impaired adolescents aged 12 to 16 in a community of 29%, while in their non-ID counterparts the prevalence was 20.2% (Kalyva, 2007). An interesting study conducted by Westermeyer, Kemp and Nugent (1996) reported that those IDs or PDDs who started smoking as early as during their adolescent years had an estimated smoking prevalence of 83%, which is similar to the general population in which that percentage is only by 4% higher (Westermeyer, Kemp & Nugent, 1996).

## **Methods**

A cross-sectional study was conducted at the Institution for the Accommodation of Persons with Mental Disabilities “Otthon”, Stara Moravica, Republic of Serbia during January and February 2021. The sample consisted of residents of a dormitory accommodation for people with mental disabilities or users of housing services with support from the same institution. The data which was gathered on the respondents were age, gender, degree of intellectual functioning, general and individual results in the field of functional efficiency, as well as the existence or level of nicotine dependence. Data on the degree of intellectual

functioning was gathered from psychological reports on the general intelligence quotient (IQ) measured by a validated scale for the assessment of intelligence. Users for whom reliable data on the degree of intellectual functioning did not exist were excluded from the sample. Users at the level of profound intellectual disability, as well as those with a comorbidity diagnosis of the autism spectrum disorder, Pica disorder, psychosis, quantitative disorders of consciousness as well as quadriplegia, were also excluded from the study. The final sample consisted of 163 respondents of both genders (50.9% men and 49.1% women) who function at the level of moderate or severe intellectual disability aged 25-82 years [average age: (mean  $\pm$  standard deviation (SD) = 52.34  $\pm$  11.1 years)]. A total of 56 respondents (34.6%) functioned at the level of moderate and 107 of them (65.6%) at the level of severe IDs.

The Fagerström Test for Nicotine Dependence (FTND) was used to assess the degree of nicotine dependence of smokers. It is a standardized instrument for assessing the intensity of physical nicotine dependence (Heatherton, Kozlowski, Frecker & Fagerstrom, 1991). The test consists of six questions of the ordinal type, regarding the consumption of cigarettes, i.e. smoking habits. Dichotomous questions are scored from 0 to 1, while multiple-choice questions are scored from 0 to 3. The maximum value on the test is 10 and indicates a high degree of nicotine dependence, while a decrease in the overall score indicates a lower degree of dependence.

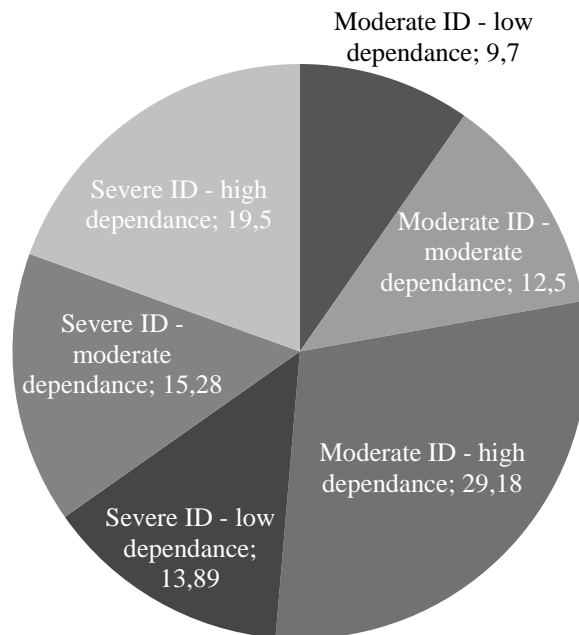
The functional efficiency assessment scale (SFP-BSM) was used to assess mobility, instrumental skills, daily activities, social competencies as well as the general functional efficiency of the respondents. The test contains a total of 26 Likert-type questions with scores of 1-4. A total of 6 questions were related to everyday life activities, nine questions were related to instrumental skills and to functioning in a social environment, and two to the area of mobility. Higher results indicate a higher degree of functional efficiency, and the final results are divided into four categories from complete dependence of the respondents in a given area (I), to the maximum ability in the studied domain (IV).

All variables in the study were nominal, registered, and, except for the age variable, categorical. In the data processing, a descriptive approach was used for demographic parameters, while in inferential processing univariate, multivariate statistical analyses were used, as well as the student's t-test for the parameter variable - age. IBM SPSS 20.0 program was used to analyse the results.

## Results

The sample consisted of 163 subjects, of normally distributed age and equal representation of both genders  $t(163) = 0.493$ ;  $p = 0.623$ . The sample consisted of 34.4% moderately and 65.65% severely intellectually impaired respondents, of which 72 (44.2%) were smokers and 91 (55.8%) were non-smokers.

**Graph 1.** Nicotine dependence in regard to level of ID



There were as many severe nicotine addicts as there were mild and moderate addicts combined (see Table 1). Having compared the obtained results with the expected values at the global level, i.e. in the region, the univariate analysis shows that the prevalence of smoking in the sampled population is significantly higher than the globally expected values ( $p < 0.01$ ) and available values for the prevalence of smoking in the region ( $p < 0.05$ ), according to data from WHO (2018).

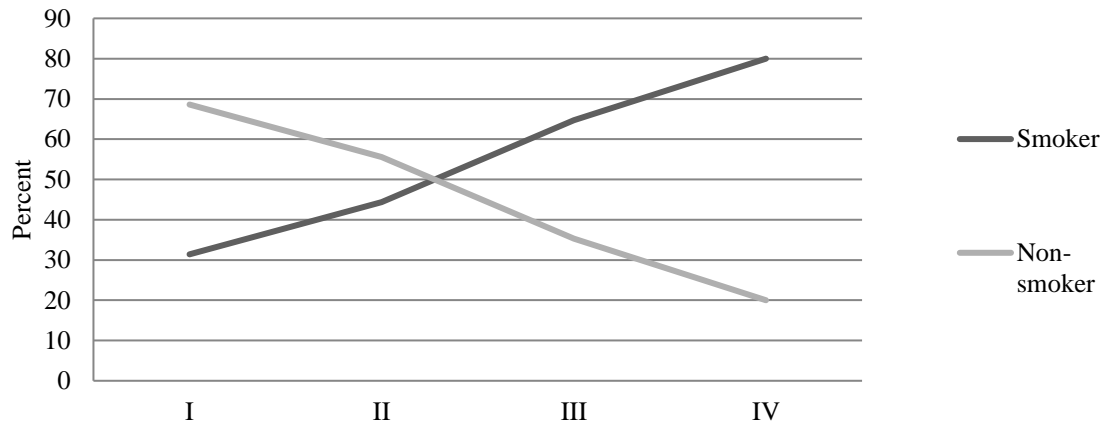
**Table 1.** Results on FTND test

|                      | N    |        | %    |        |
|----------------------|------|--------|------|--------|
|                      | male | female | male | female |
| Minimally dependent  | 11   | 6      | 28.2 | 18.2   |
| Moderately dependent | 8    | 12     | 20.5 | 36.3   |
| Highly dependent     | 20   | 15     | 51.3 | 45.5   |
| Total                | 39   | 33     | 54.2 | 45.8   |

The results of the bivariate  $\chi^2$  independence test show that there is a statistically significant correlation between the existence of nicotine dependence and the degree of

intellectual disability  $\chi^2(1) = 16.60$ ,  $rC = 0.32$ ,  $p < 0.01$ , with the level of ID not correlating with the degree of nicotine dependence  $\chi^2(1) = 6.15$ ,  $rC = 1.726$ ,  $p > 0.5$ . Also, demographic characteristics such as gender, age or type of housing have not been shown to be factors that correlate with the occurrence of smoking.

**Graph 2.** Relationship between smoking and functional efficiency level in the sample



A significantly higher frequency of smoking was recorded among respondents at a higher level of functioning in the social environment ( $\chi^2 = 8.549$ ;  $df = 3$ ;  $p = 0.036$ ), as well as among those with better daily life skills ( $\chi^2 = 10.925$ ;  $df = 3$ ;  $p = 0.012$ ) and instrumental life skills ( $\chi^2 = 13.932$ ;  $df = 3$ ;  $p = 0.003$ ). The area of mobility shows a statistically significant correlation with the existence of smoking ( $\chi^2 = 16.08$ ;  $df = 3$ ;  $p < 0.01$ ) with the highest effect size ( $rC = 0.314$ ).

## Conclusion

The research determined the prevalence of smoking of 44.2% in adults with moderate and severe intellectual disabilities, which is twice as high compared to the global results on the general population, or about 1.2% higher than the data for the Balkans (WHO, 2018). Unlike the data published (WHO, 2018) for the general population, no gender-related bases of smoking habits were found.

As some studies have already shown (Hymowitz et al, 1997; Singh et al., 2011; Tracy & Hoksens 1997; Van der Nagel et al., 2017), it seems that ID persons with a higher degree of intellectual functioning have a higher affinity for the use of tobacco products. On the other hand, the results we obtained indicate that the prevalence of smokers with severe IDs is twice as high and does not correspond to those in the study by Hymowitz et al. (1997) where, in the same category, the representation is less than 10 percent, which in the case of moderate and borderline IDs is slightly below 40%, which corresponds to our data.

Although no correlation was found between respondents who lived in dormitory accommodation and those who were beneficiaries of supported housing, in general, a higher prevalence of smoking was found in people with IDs in segregated conditions, which is consistent with data from other authors (Emerson, 2011; Hymowitz et al 1997; Rimmer et al., 1995; Robertson et al., 2000; Rimmer et al., 1994; Tracy & Hoksen 1997; Whitaker & Hughes, 2003). Although some authors state that there is a higher frequency of smoking in males (Rimmer et al., 1994; Rimmer et al., 1995; Robertson et al., 2000; Taylor et al., 2004), this study found no difference in terms of gender structure.

It is important to work on smoking prevention programs. Overcoming nicotine addiction is in any case a difficult goal to achieve. The capacity to understand the problem that this harmful habit brings with it, as the motivation needed to achieve the goal is often not sufficiently developed, especially in people with a generally lower cognitive capacity. Although several approaches to the quitting of smoking have been developed, such as “brand fading” (Brown, Lichtenstein, McIntyre & Harrington-Kostur, 1984; Foxx & Brown, 1979) in the practice of treatment of persons with IDs in this field, this type of treatment has not proved to be overly effective (Sturmeay, Reyer, Lee & Robek, 2003).

The study also had several limitations that should be noted. The first issue is the small sample size for the purpose of the relevant determination of the prevalence in the population. The sample consisted of ID persons linked to the social protection institution in which the research was conducted, which is a service provider for the respondents. This made it impossible for people with IDs living in their primary families to enter the sample. Also, due to the characteristics of the institution, there were no respondents with mild IDs or a borderline intelligence, although the increase in IQ towards the borderline proved to be a risk factor. The study did not take into account sociodemographic influences during the first contact with tobacco products, such as e.g. school and family constellation or the use of cigarettes as reinforcements. Current and long-term health outcomes should be taken into account. Also, it would be significant to use instruments that would enable the analysis by parametric methods in order to obtain a more comprehensive analysis and to make out possible effects of mediation and/or moderation.



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## Sažetak

*Uvod.* Dosadašnje studije koje su se bavile ovom problematikom kod marginaliziranih društvenih grupa po pravilu su zanemarivale intelektualno ometene ispitanike. Izvjesna istraživanja pokazuju višu prevalencu pušenja kod osoba sa IO, u drugim se izvještava o tome da osobe sa IO puše tri do četiri puta rjeđe nego neurotipični ispitanici, dok neki radovi govore u prilog podjednake zastupljenosti u odnosu na opću populaciju.

*Cilj rada* bio je utvrditi prevalencu i karakteristike pušačkih navika kod korisnika smještaja sa IO unutar usluga socijalne zaštite.

*Metoda.* Ova pilot studija presjeka sprovedena je tokom siječnja i veljače 2021. godine. Prigodan uzorak činile su 163 odrasle osobe sa dijagnozom umjerene ili teške IO uzrasta  $52,34 \pm 11.1$  godina (50.9% muškaraca i 49.1% žena). Za procjenu stupnja nikotinske zavisnosti pušača korišten je Fagerstorm Test For Nicotine Dependence, dok je funkcionalna efikasnost procijenjena standardiranom skalom za procjenu funkcionalne efikasnosti.

*Rezultati.* Istraživanje je pokazalo da odrasle osobe sa UIO i TIO pri domskom smještaju i stanovanju uz podršku pokazuju značajno višu prevalenciju pušenja u odnosu na neurotipičnu populaciju. Pojava pušenja u značajnoj je vezani sa stupnjem intelektualne ometenosti ( $\chi^2 = 16,591$ ;  $df = 1$ ;  $rC = 0,32$ ;  $p < 0.01$ ), a tendencija ka korištenju duhana raste sa povećanjem općeg nivoa skora funkcionalne efikasnosti osoba sa IO, ali i pojedinih parametara kao što je stepen mobilnosti ( $p < 0.05$ ) ili domena funkcioniranja u socijalnom okruženju ( $p < 0.05$ ).

*Zaključak.* Dobiveni rezultati sugeriraju da umjerena i teška IO u osoba koje su institucionalizirane ili žive uz podršku predstavljaju rizikofaktor za konzumiranje duhanskih proizvoda.