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ORIGINAL

On the prevention of electronic cigarette use in adolescents

Sobre la prevención del uso de Cigarrillos Electrónicos en adolescentes

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The significant and rapid growth in the use of e-cigarettes in recent years is raising concerns from both scientific and professional perspectives. E-cigarettes in their different forms (e.g., vapes) are defined as electronic delivery systems for nicotine, flavouring substances or tetrahydrocannabinol (THC) and cannabinoid (CBD) oils. The devices heat a liquid to produce an aerosol that people inhale into their lungs. Although they were initially designed as a possible aid to quit smoking or to reduce smoking risks associated with conventional cigarettes, they have also been shown to have potential consequences in terms of physical (e.g., respiratory problems) and psychological health (e.g., addictive behaviours), especially among the adolescent population (Wold et al., 2022). The question therefore arises as to whether the possible benefits of e-cigarettes in risk reduction and their use as a treatment, as supported by some studies (Lindson et al., 2024), are greater than the risks and consequences increasingly reported in the literature on e-cigarette smoking (The Lancet Regional Health – Europe, 2024).

The use of these devices has increased worldwide among adults, children and young people (WHO, 2022). A global systematic review analyzing the prevalence of e-cigarette smoking in people under 20 years of age found a general prevalence (defined as any lifetime use) of 17.2%, rising to 32% in those younger than 16, with a current use (defined as use in the last 30 days) of 7.8% (Yoong et al., 2021). According to the ESTUDES survey (OEDA, Spanish Observatory on Drugs and Addictions, 2023), the prevalence in Spain is even higher, with 54.6% of adolescents between 14 and 18 years of age having tried them at some point in their lives and 26.3% using them within the last 30 days. In under 10 years, their use has risen by 40%. As for content, most report using them with flavouring substances (more than 25%), followed by those who smoke them with nicotine (more than 17%), with nicotine and cannabis (2%), and finally, only with cannabis (0.5%). Furthermore, the perceived risk of using e-cigarettes of 38% is the lowest of all drugs assessed by ESTUDES. This low perception of risk could be one of the factors increasing the likelihood

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of use, given that the marketing campaigns for these products have aimed at promoting their use as healthier than tobacco, as a harmless or even as a therapeutic alternative (D'Angelo et al., 2021).

At the same time, in recent years, tobacco use has fallen in the adolescent population in Europe and Spain (WHO, 2022; Brime & Villalbí, 2023). Some authors have argued that the use of electronic cigarettes may have contributed to this reduction (Greenhalgh et al., 2021). However, recent data collected in England indicate a very significant rise in the use of e-cigarettes, in disposable format, among the young population (18-24 years), without any appreciable association with a reduction of tobacco use at the same rate (Jackson et al., 2024). The authors also wonder whether people who start using e-cigarettes would be tobacco users if vapes did not exist, given that the data came from a population of people who never regularly smoked.

In any case, given the novelty of these devices, research that will allow us to unravel the relationship between the use of e-cigarettes and cigarette smoking is still pending. The gateway hypotheses to tobacco do not seem well-founded since although meta-analyses of prospective cohort studies indicate that the use of e-cigarettes is linked to a higher risk of starting to smoke in the future (Khouja et al., 2021), a cause-and-effect association cannot be established. The research to date has many biases and methodological flaws that prevent this type of relationship being established (Chan et al., 2021). According to other approaches, the available evidence points to a common vulnerability in people who may become nicotine users, whether in the form of e-cigarettes or conventional ones (Etter, 2018). Indeed, many surveys indicate the coexistence of both types of use in regular smokers. For all these reasons, many questions remain to be answered in order to explain the relationship between both behaviours and thus allow the development of more effective prevention strategies, for example.

The approaches in the field of smoking prevention can be useful if the similarity of both behaviours is taken into account. To date, the regulations on the use, marketing and advertising of e-cigarettes are less strict than those applied to tobacco, despite the fact that consensus documents have been recommending for years that they be equated with tobacco (National Committee for the Prevention of Smoking, 2020), irrespective of whether the capsules used in these devices contain nicotine or not. Prevention must be managed through various approaches and contexts. In the case of tobacco, effective environmental prevention strategies already exist (Becoña Iglesias, 2021), such as raising prices, reducing public spaces for smoking, improving the protection of minors from these devices, controlling advertising and the use of generic packaging, monitoring the tobacco industry's strategies for attracting young people, controlling the sale of vaping-related products, and also increasing school prevention programs.

Similarly, it is also necessary to develop universal, selective and indicated prevention programs in the school context. Since it is the place where adolescents interact the most, where they establish interpersonal relationships and develop socio-emotional skills (Fonseca-Pedrero et al., 2023), the educational environment is ideal for implementing prevention programs. Although there are currently no specific programs for the prevention of e-cigarette use that have been empirically tested, there is evidence of the effectiveness of some preventive actions against tobacco use in the school context. Preventive interventions combining social competence and influence training have been shown to be the most effective measures in this context for smoking prevention (Thomas et al., 2013). According to Griffin and Botvin's (2010) classification, social competence programs are based on Bandura's (1976) social learning theory, by which children learn to use drugs through modelling, imitation and reinforcement. Programs would therefore benefit from the inclusion of such components as problem-solving and decision-making training, strategies for increasing self-control and self-efficacy, stress-coping strategies, and social skills training. These would be supplemented by other activities drawn from social influence programs, such as resistance and refusal skills to cope with peer pressure and other high-risk situations.

Arising from other theoretical approaches, such as Azjen's (1991) Theory of Planned Action, the perception of behavioural control and the subjective norm of smoking, i.e., the perception of behaviour in society, are two important elements for designing preventive interventions in adolescents (Topa & Moriano, 2010). A core element is self-efficacy training, which can serve to build confidence in making decisions and resisting risky behaviours, such as the use of e-cigarettes. It is also important that prevention programs address the reasons why adolescents might use e-cigarettes and their beliefs around what constitutes nicotine addiction or susceptibility to marketing (e.g., attractive flavours) as a means of allowing young people to reflect on the perceptions underlying their decisions to use e-cigarettes. To be successful, programs should also address peer pressure, harm/risk perceptions, and other key reasons why adolescents are particularly drawn to these newer tobacco products, as well as the aforementioned refusal skills (Liu et al., 2020).

On the other hand, and particularly in cases where smoking is already present, Bricker et al. (2010) argued that the use of the motivational interview approach is a good tool to guide preventive programs in adolescents. This motivational approach uses a therapeutic style that seeks commitment to change, avoids confrontation by working with people's ambivalence and increases their self-efficacy. These are less invasive actions with greater autonomy and independence for adolescents in their decision-making. It is precisely from this perspective that brief interventions (BI)

to prevent substance use in the school context become useful, given their active approach to increasing the willingness to change in people who smoke and have not considered changing. In a meta-analysis carried out on the effects of this type of BI (Carney et al., 2016), the results indicated that brief interventions in the school context had a significant effect on reducing the use of alcohol and other substances compared to those adolescents who did not receive any type of intervention.

In conclusion, although we know about effective prevention strategies for smoking and the use of other drugs, there is a need for research into their usefulness in preventing e-cigarette use. Evidence is needed to inform decisions by policy makers, practitioners and researchers about the types of health promotion programs or other activities that should be implemented to support e-cigarette prevention or cessation among adolescents (Barnes et al., 2023). At the same time, regulations and strategies for environmental prevention need to evolve to the level of those already applied to tobacco.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Bandura, A. (1976). *Social Learning Theory* (1st edition.). Prentice-Hall.
- Barnes, C., Turon, H., McCrabb, S., Hodder, R. K., Yoong, S. L., Stockings, E., Hall, A. E., Bialek, C., Morrison, J. L. & Wolfenden, L. (2023). Interventions to prevent or cease electronic cigarette use in children and adolescents. *The Cochrane Database of Systematic Reviews*, 11(11), CD015511. <https://doi.org/10.1002/14651858.CD015511.pub2>
- Becoña Iglesias, E. (2021). *La Prevención Ambiental en el Consumo de Drogas. ¿Qué medidas podemos aplicar?*. Ministerio de Sanidad. Delegación del Gobierno para el Plan Nacional sobre Drogas.
- Bricker, J. B., Liu, J., Comstock, B. A., Peterson, A. V., Kealey, K. A. & Marek, P. M. (2010). Social cognitive mediators of adolescent smoking cessation: Results from a large randomized intervention trial. *Psychology of Addictive Behaviors*, 24(3), 436-445. <https://doi.org/10.1037/a0019800>
- Brime, B., & Villalbí, J. R. (2023). ¿Está disminuyendo el consumo de tabaco, alcohol y cannabis por los adolescentes? *Adicciones*, 35(4), 383-386. <https://doi.org/10.20882/adicciones.2035>
- Carney, T., Myers, B. J., Louw, J. & Okwundu, C. I. (2014). Brief school-based interventions and behavioural outcomes for substance-using adolescents. In *Cochrane Database of Systematic Reviews*. John Wiley & Sons, Ltd.
- Chan, G. C. K., Stjepanović, D., Lim, C., Sun, T., Shanmuga Anandan, A., Connor, J. P., Gartner, C., Hall, W. D. & Leung, J. (2021). Gateway or common liability? A systematic review and meta-analysis of studies of adolescent e-cigarette use and future smoking initiation. *Addiction*, 116(4), 743-756. <https://doi.org/10.1111/add.15246>
- Comité Nacional para la Prevención del Tabaquismo (2020). Documento del Consenso de la CNPT sobre dispositivos susceptibles de liberar nicotina. Comité Nacional para la Prevención del tabaquismo.
- D'Angelo, H., Patel, M. & Rose, S. W. (2021). Convenience Store Access and E-cigarette Advertising Exposure Is Associated With Future E-cigarette Initiation Among Tobacco-Naïve Youth in the PATH Study (2013–2016). *Journal of Adolescent Health*, 68(4), 794-800. <https://doi.org/10.1016/j.jadohealth.2020.08.030>
- Etter, J.-F. (2018). Gateway effects and electronic cigarettes. *Addiction*, 113(10), 1776-1783. <https://doi.org/10.1111/add.13924>
- Fonseca-Pedrero, E., Díez-Gómez, A., Pérez-Albéniz, A., Lucas-Molina, B., Al-Halabi, S. & Calvo, P. (2023). Psychology Professionals in Educational Contexts: An Unavoidable Necessity. *Papeles del Psicólogo - Psychologist Papers*, 44(3), 112.
- Greenhalgh, E. M. & Scollo, M. M. (2021) Population-level benefits and harms of increasing e-cigarette use. www.tobaccoinaustralia.org.au/chapter-18-e-cigarettes/18-8-potential-positive-impacts
- Griffin, K. W. & Botvin, G. J. (2010). Evidence-Based Interventions for Preventing Substance Use Disorders in Adolescents. *Child and Adolescent Psychiatric Clinics of North America*, 19(3), 505-526. <https://doi.org/10.1016/j.chc.2010.03.005>
- Jackson, S. E., Shahab, L., Tattan-Birch, H. & Brown, J. (2024). Vaping among adults in England who have never regularly smoked: A population-based study, 2016-24. *The Lancet. Public Health*, 9(10), e755-e765. [https://doi.org/10.1016/S2468-2667\(24\)00183-X](https://doi.org/10.1016/S2468-2667(24)00183-X)
- Khouja, J. N., Suddell, S. F., Peters, S. E., Taylor, A. E. & Munafò, M. R. (2021). Is e-cigarette use in non-smoking young adults associated with later smoking? A systematic review and meta-analysis. *Tobacco Control*, 30(1), 8-15. <https://doi.org/10.1136/tobaccocontrol-2019-055433>
- Lindson, N., Butler, A. R., McRobbie, H., Bullen, C., Hajek, P., Begh, R., Theodoulou, A., Notley, C., Rigotti, N. A., Turner, T., Livingstone-Banks, J., Morris, T. & Hartmann-Boyce, J. (2024). Electronic cigarettes for smoking cessation. *Cochrane Database of Systematic Reviews*, 1. <https://doi.org/10.1002/14651858.CD010216.pub8>
- Liu, J., Gaiha, S. M. & Halpern-Felsher, B. (2020). A Breath of Knowledge: Overview of Current Adolescent E-cigarette Prevention and Cessation Programs. *Current Ad-*

- diction Reports*, 7(4), 520-532. <https://doi.org/10.1007/s40429-020-00345-5>
- Ministerio de Sanidad (2022). Informe sobre los cigarrillos electrónicos: situación actual, evidencia disponible y regulación. <https://www.sanidad.gob.es/areas/promocionPrevencion/tabaco/profesionales/docs/Informe-Cigarrilloselectronicos.pdf>
- Organización Mundial de la Salud (2022). Tobacco: e-cigarettes. <https://www.who.int/news-room/questions-and-answers/item/tobacco-e-cigarettes>
- Observatorio Español de las Drogas y las Adicciones (2023). Encuesta sobre uso de drogas en enseñanzas secundarias en España (ESTUDES). Madrid: Delegación del Gobierno para el Plan Nacional sobre Drogas.
- The Lancet Regional Health – Europe. (2024). E-cigarettes: Public health saviour or Trojan Horse? *The Lancet Regional Health - Europe*, 42, 100997. <https://doi.org/10.1016/j.lanepe.2024.100997>
- Thomas, R. E., McLellan, J. & Perera, R. (2013). School-based programmes for preventing smoking. *The Cochrane Database of Systematic Reviews*, 2013(4), CD001293. <https://doi.org/10.1002/14651858.CD001293.pub3>
- Topa, G. & Moriano Leon, J. A. (2010). Theory of planned behavior and smoking: Meta-analysis and SEM model. *Substance Abuse and Rehabilitation*, 23. <https://doi.org/10.2147/SAR.S15168>
- Wold, L. E., Tarran, R., Crotty Alexander, L. E., Hamburg, N. M., Kheradmand, F., St. Helen, G., Wu, J. C. & on behalf of the American Heart Association Council on Basic Cardiovascular Sciences; Council on Arteriosclerosis, Thrombosis and Vascular Biology; Council on Hypertension; and Stroke Council. (2022). Cardiopulmonary Consequences of Vaping in Adolescents: A Scientific Statement From the American Heart Association. *Circulation Research*, 131(3), e70-e82. <https://doi.org/10.1161/RES.0000000000000544>
- Yoong, S. L., Hall, A., Leonard, A., McCrabb, S., Wiggers, J., Tursan d'Espaignet, E., Stockings, E., Gouda, H., Fayokun, R., Commar, A., Prasad, V. M., Paul, C., Oldmeadow, C., Chai, L. K., Thompson, B. & Wolfenden, L. (2021). Prevalence of electronic nicotine delivery systems and electronic non-nicotine delivery systems in children and adolescents: A systematic review and meta-analysis. *The Lancet. Public Health*, 6(9), e661-e673. [https://doi.org/10.1016/S2468-2667\(21\)00106-7](https://doi.org/10.1016/S2468-2667(21)00106-7)