Multicriteria decision analysis in opioid substitution treatment programs in opioid use disorders

Análisis de decisión multicriterio en programas de tratamiento de sustitución de opiáceos en trastornos por consumo de opiáceos

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The adoption of new health care interventions offering innovative profiles regarding efficacy and safety but with a greater financial impact compared to previously used treatments is associated with increased health care costs. Other criteria alongside traditional clinical evidence are thus necessary for effective decision making. A prime example of this is health care efficiency assessment, with which the relationship between the health outcomes of new therapeutic options and their costs can be established. The fundamental aim of a value-based health system is to achieve the best health outcomes for patients at an acceptable and sustainable cost to the system. It is thus essential to measure and compare the health-related results of the strategies used with a given pathology (Porter, 2010, McMahon & Chopra, 2012). However, there are other additional criteria in decision making, such as social relevance, prevalence and incidence of the diseases, degree of innovation, comparative effectiveness, medical needs not covered, individual decisions or patient preferences, satisfaction with treatment, number of patients affected, empowerment of patients and principles of fairness. That is to say, considering the large number of criteria involved in any given disease and how to approach it, there will be substantial differences of opinion in many cases among the HCPs who treat it, the decision-makers or political actors who provide resources for its treatment, and the patients who suffer it.

With the aim of facilitating decision-making, multi-criteria decision analysis (MCDA) is increasingly being applied. These analyses represent a new approach to decision-making in complex environments since they make it possible to systematise and simplify decisions in a transparent manner in different stages, establishing and estimating the preferences of decision-makers and influencers (doctors, pharmacists, nurses, psychologists, managers and patients) in an explicit manner (Thokala et al., 2016, Marsh et al., 2016).

It is well known that opioid use disorders (OUDs) represent a public health problem from both welfare and social perspectives (Torrens, Mestre-Pintó, Montanari, Vicente, J. & Domingo-Salvany, 2017, Pedrero-Pérez & MethaQoL, 2017, Barrio et al., 2017, Martinez-Luna et al., 2018). It has been estimated that opioid users in Europe have at least a 5-10 times higher risk of death than the rest of the population of the same age and gender (European Monitoring Centre for Drugs and Drug Addiction, 2017). At the same time, the United States has seen an increase in deaths linked to overdoses of heroin as well as legal

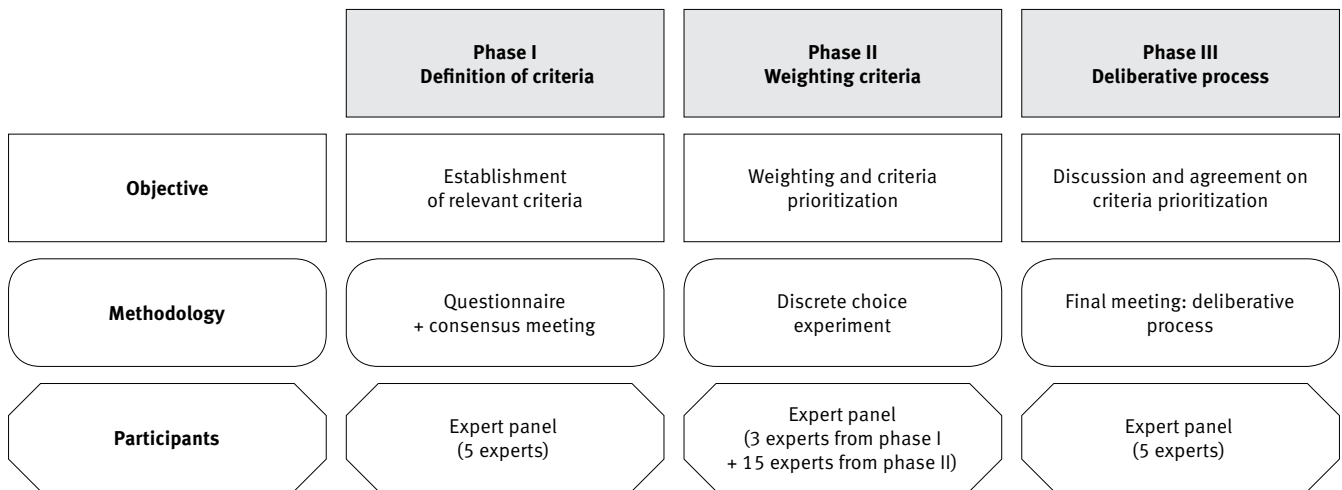|	Phase I Definition of criteria	Phase II Weighting criteria	Phase III Deliberative process
Objective	Establishment of relevant criteria	Weighting and criteria prioritization	Discussion and agreement on criteria prioritization
Methodology	Questionnaire + consensus meeting	Discrete choice experiment	Final meeting: deliberative process
Participants	Expert panel (5 experts)	Expert panel (3 experts from phase I + 15 experts from phase II)	Expert panel (5 experts)

Figure 1. Phases of Multicriteria Decision Analysis (MCDA) in opioid substitution treatment programs in opioid use disorders

and illegal laboratory-produced opioids (Hedegaard, Warmer & Miniño 2017).

For these reasons, a multi-criteria decision analysis approach, sponsored by Indivior España, is currently being developed in order to provide information that will help us determine the scope of OUDs and facilitate decision-making regarding their treatment. The aim of the project is to use MCDA methodology to establish what the most important health outcomes would be and how they would influence the assessment of opioid substitution treatment programs in patients with OUD.

The project, which involves the participation of a panel of 20 experts in addiction management, has established the following three phases based on the international recommendations of the *International Society for Pharmacoeconomics and Outcomes Research* (ISPOR) (Thokala et al., 2016; Marsh et al., 2016) (Figure 1): i) an initial phase to define the measurement of health outcomes to be considered in the assessment of OUD patients; ii) a second phase of screening and weighting to assess the relevance for decision-making of each of these criteria, based on the methodology of Discrete Choice Experiments (DCE), and iii) a final phase consisting of a deliberative process to establish a global assessment of each of the criteria considered in the previous phases.

In a first meeting with the expert panel, the criteria considered to assess the health outcomes among Spanish OUD patients were: substance use (opioids, alcohol, tobacco, stimulants and cannabis, according to DSM-5 criteria), other mental disorders (affective/anxiety disorder, psychosis and risk of suicide, attention deficit hyperactivity disorder, borderline personality disorder, antisocial personality disorders, gambling disorder and other impulse control disorders, according to DSM-5 criteria), level of disability (with the WHODAS II questionnaire),

adherence, medical illnesses (medical comorbidities, risk behaviours, infectious and sexually transmitted diseases), psychosocial aspects (hostile and/or violent behaviour, presence of work problems), functional disability (quality of life - using the SF-36 questionnaire, satisfaction with treatment and service - according to the Verona Service Satisfaction Scale, social functionality - with the Duke-UNC Social Support Scale).

Additionally, the expert panel considered that there were certain factors related to patient profiles that could affect the assessment of the following criteria: age group (under 18 years of age, 18-24, 25-34, 35-44, over 45), relapses (yes/no), length of addiction (less than one year, from one to two years, more than two years), number of previous treatments received (none, one, two, three or more), type of previous treatment received (opioid antagonist, opioid agonist and drug free), location where previous treatments were received (outpatient regime, day centre, residential detoxification unit), criminal record (whether prosecuted for crimes in connection with substance use or not).

Multicriteria decision analyses at international level are scarce and have focused on specific pathologies such as rare diseases or HIV/AIDS (Paulden, Stafinski, Menon, & McCabe 2015, Radaelly, Lettieri & Masella 2014, Sussex et al., 2013, Youngkon, Teerawattananon, Tantivess, & Baltussen, 2012). Nevertheless, this type of analysis has also been used for the evaluation of orphan drugs in Catalonia (Gilabert-Perramon et al., 2017). In addition, experience in the application of MCDA in the field of addiction is currently being gathered in the United Kingdom with the aim of assessing the harm caused by drug use in the user and other individuals. Moreover, MCDA could be a tool that facilitates the implementation of new forms of financing such as results-based payment. Indeed,

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initiatives have already been promoted by the United Kingdom government, with a proposal to measure addiction treatment results and establish how results-based payment agreements could be used to pay for treatment services (UK Government Policy Paper, 2013). In conclusion, MCDA can become a methodology that may improve decision-making and socio-health management of existing resources, incorporating information on health outcomes, pharmacoeconomic evidence and ethical criteria, and involving all decision-makers from a multidisciplinary perspective in the selection of health interventions for pathologies such as OUD.

Conflict of interests

References

Barrio, P., Ezzeldin, M., Bruguera, P., Pérez, A., Mansilla, S., Fàbrega, M.,… Balcells, M. (2016). Metadona para el tratamiento de la dependencia de opioides de prescripción médica. Una revisión retrospectiva de historias clínicas. *Adicciones, 29*, 55-60. doi:10.20882/adicciones.832.

Gilabert-Perramon, A., Torrent-Farnell, J., Catalan, A., Prat, A., Fontanet, M., Puig-Peiró, R.,… M., Badia, X. (2017). Drug evaluation and decision making in Catalonia: development and validation of a methodological framework based on Multi-Criteria Decision Analysis (MCDA) for orphan drugs. *International Journal of Technology Assessment in Health Care, 33,* 111-120. doi:10.1017/S0266462317000149.

Hedegaard, H., Warner, M. & Miniño, A. M. (2017). Drug overdose deaths in the United States, 1999–2015. *National Center for Health Statistics Data Brief, 273,* 1-8.

Marsh, K., IJzerman, M., Thokala, P., Baltussen, R., Boysen, M., Kaló, Z.,… ISPOR Task Force (2016). Multiple Criteria Decision Analysis for Health Care Decision Making–Emerging Good Practices: Report 2 of the ISPOR MCDA Emerging Good Practices Task Force. *Value in Health, 19,* 125-137. doi:10.1016/j.jval.2015.12.016.

Martínez-Luna, N. G., Rodríguez-Cintas, L., Esojo, A., Palma-Álvarez, R. F., Robles-Martínez, M., Grau-López, L.,… Roncero, C. (2018). Harm reduction program use, psychopathology and medical severity in patients with methadone maintenance treatment. *Adicciones, 30*: 197-207. doi:10.20882/adicciones.897.

McMahon, L.F. & Chopra, V. (2012). Health care cost and value: the way forward. *Journal of the American Medical Association, 307,* 671-672. doi:10.1001/jama.2012.136.

Nutt, D. J., King, L. A. & Phillips, L. D. (2010). Independent Scientific Committee on Drugs. Drug harms in the UK: a multicriteria decision analysis. *Lancet, 376,* 1558-1565. doi:10.1016/S0140-6736(10)61462-6.

Observatorio Europeo de las Drogas y las Toxicomanías (2017). Informe Europeo sobre Drogas 2017: Tendencias y novedades. Oficina de Publicaciones de la Unión Europea, Luxemburgo. Retrieved at http://www.emcdda.europa.eu/system/files/publications/4541/TDA-T17001ESN.pdf.

Paulden, M., Stafinski, T., Menon, D. & McCabe, C. (2015). Value-based reimbursement decisions for orphan drugs: A scoping review and decision framework. *Pharmacoeconomics, 33,* 255-269. doi:10.1007/s40273-014-0235-x.

Pedrero-Pérez, E. & MethaQoL, G. (2016). Dosis de metadona y su relación con calidad de vida, satisfacción, psicopatología, rendimiento cognitivo y consumo adicional de sustancias no prescritas. *Adicciones, 29,* 37-54. doi:10.20882/adicciones.831.

Radaelly, G., Lettieri, E. & Masella, C. (2014). Implementation of Eunetha core Model in Lombardia: The VTS framework. *International Journal of Technology Assessment in Health Care, 30,* 105-112. doi:10.1017/S0266462313000639.

Sussex, J., Rollet, P., Garau, M., Schmitt, C., Kent, A. & Hutchings, A. (2013). A pilot study of multicriteria decision analysis for valuing orphan medicines. *Value in Health, 16,* 1163-1169. doi:10.1016/j.jval.2013.10.002.

Thokala, P., Devlin, N., Marsh, K., Baltussen, R., Boysen, M.,… Ijzerman, M. (2016). Multiple Criteria Decision Analysis for Health Care Decision Making–An Introduction: Report 1 of the ISPOR MCDA Emerging Good Practices Task Force. *Value in Health, 19,* 1-13. doi:10.1016/j.jval.2015.12.003.

Torrens, M., Mestre-Pintó, J. I., Montanari, L., Vicente, J. & Domingo-Salvany, A. (2017). Dual diagnosis: An European perspective. *Adicciones, 29,* 3-5. doi:10.20882/adicciones.933.

United Kingdom Goverment (2013). Payment by Results drugs recovery pilot: draft outcome definitions. *United Kingdom Goverment Department of Health and Social Care.* Retrieved at https://www.gov.uk/government/publications/piloting-payment-by-results-for-drugs-recovery-draft-outcome-definitions.

Youngkong, S., Teerawattananon, Y., Tantivess, S. & Baltussen, R. (2012). Multi-criteria decision analysis for setting priorities on HIV/AIDS interventions in Thailand. *Health Research Policy and Systems, 10,* 6. doi:10.1186/1478-4505-10-6.