



Evaluating Quality of Decision-Making Processes in Health Technology Assessment

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Received: 28 August 2021

Revised: 20 September 2021

Accepted: 15 October 2021

Abstract

One of the applications of decision-making algorithms is in health technology assessment agencies. However, there remains doubt regarding their increase in quality decision-making. To reach a reliable conclusion regarding the quality, each algorithm has to be applied to the real world, which in this case are the HTA organizations. The purpose of this literature review was the identification of current techniques (tools, questionnaires, surveys and studies) for measuring the quality of the decision-making algorithms when applied to three stakeholders. Because the main goal here was identifying techniques for assessing the quality of decision making in HTA agencies with the help of google scholar, a literature review was conducted. It should be pointed out that this search was structured by using certain key words. After completion, a second review was carried out for validation of the experiment. Revision of this subject confirmed the small amount of research conducted in this area, the most reliable technique for maintaining decision-making based on this review is QoDoS. This technique is involved in the lifecycle of medicines and the next steps would be continuous examination of its validity, sensitivity and reliability.

Keywords: quality decision making, health technology assessment.

How to cite the article:

F. Madanipour, S. Shavvalpour, M. Frouzanmeher, *Evaluating Quality of Decision-Making Processes in Health Technology Assessment*, J. Practical Buss. Law, 2021; 2(5): 01-06

Introduction

The office of Technology Assessment first created the concept of HTA in the United States in 1978 (Banta, Behney, & Andrulid, 1978). This was a reaction to the fact that health spending was faced with a sudden increase, the observation of clinical practices became unexplainable and there was a large amount of uncertainty about how to put the results of many health technologies to global use. By evaluating the benefits and costs of a health technology compared to existing alternatives for health care, considering clinical and economic evidence in order to inform pricing and coverage decisions, HTA will try to come on step closer to its goal (Drummond et al., 2008). Currently, first

world countries in Europe have taken on some form of HTA process to maintain the value of new health technologies within health services financed by public funds (Taylor, Drummond, Salkeld, & Sullivan, 2004). Shared objectives and different structures are common in a large number of publications on the HTA processes followed in industrialized countries (Le Polain, Franken, Koopmanschap, & Cleemput, 2010; Sorenson, Drummond, & Kanavos, 2008; Wilsdon & Serota, 2011).

Health care agencies maintain health technology assessment (HTA) on a global level to support the struggle in deciding whether to use new technologies concerning general health such as drug therapies, equipment and medical devices.

HTA's wide spread characteristic not only connects scientific evidence to policy-making (Garrido, 2008), but it also factors in medical, social, ethical and economic implications regarding the different phases of health technology (development, diffusion and usage) (Drummond et al., 2008). Furthermore, care agencies are no longer the only spotlight; many hospitals take advantage of HTA models with respect to buying new and expensive health technologies (Gagnon, 2014).

The literature of decision-making is historical and contains a wide variety of academic fields from philosophy and history all the way to mathematics (Buchanan & O Connell, 2006). More recently, in an attempt to reach higher quality in decision-making, the science and art of this academic field have been established regarding the psychological views of judgment, different styles for decision-making, as well as behavioral economics (Anderson, Richard, & Thaler, 2010; Kahneman, 2011; Lovallo & Sibony, 2010). Based on this research, many conclusions reached in decision-making, come from its mid and final stage: the quality of the process and outcome, and even though right decisions can be made due to uncertainty the outcome may not be in favor (Bujar, McAuslane, Walker, & Salek, 2017).

The subjective nature of quality makes its definition difficult. However, it does not eliminate the possibility for identifying elements of a quality decision-making process. Since the dilemma, here is characterizing general principles and steps for making quality decisions, a few academic and consultancy groups have been influential (Blenko, Mankins, & Rogers, 2010; Hammond, Keeney, & Raiffa, 2015; Matheson & Matheson, 1998). These groups have also been involved in identifying the problem and objectives; presenting creative and applicable options; gathering of meaningful and dependable information for better decision-making; clarifying the consequences and trade-offs for each useful element; factoring in the level of uncertainty and eliminating biases; using logically correct reasoning and acting upon it.

More recently, these principles have been put to use in different fields such as economics, environmental protection, clinical practice, nuclear safety and government affairs to facilitate the process for making high quality decisions (Dowding & Thompson, 2003; Leonard, 2008; Morton, Airoldi, & Phillips, 2009).

However, when it comes to research on decision-making for reaching a high quality process during health technology assessment (HTA), a lack of articulation is present. There is also an ambiguity on how it is applied to organizations and individuals in companies and agencies. This may be because the science of decision-making is not well known in this area as well as limited training

and education (Bujar, Donelan, McAuslane, Walker, & Salek, 2016).

Aside from legislative algorithms that have high influence in organizations, other algorithms with similar influence exist and regulatory authorities, HTA agencies and pharmaceutical companies have been using a number of these algorithms for specific decision-making. In particular, the practice of benefit-risk assessment has had a high influence of decision-making by bringing certain concepts to the forefront by using qualitative and quantitative tools supplied by pharmaceutical companies and regulatory authorities (Food & Administration, 2013; Guo et al., 2010). Also in the area of HTA regarding inclusion of multiple decision criteria and a structured assessment of comparative added benefits of a technology against the cost of treatment (Cherny et al., 2015). All this aside, there is a third area that needs to be addressed. Pharmaceutical companies and regulatory authorities have used this area for proper submission and review practices. However our main concern is HTA agencies and this third area is used for standardize evidence generation and analysis of various decision-making systems for the assessment of health technologies (Rogowski, Hartz, & John, 2008). Finally, decision-making process of various committees must be formulized which HTA agencies have developed specific algorithms to do this (Hassanzadeh, Gourc, Marmier, & Bougaret, 2011).

Methods

The literature was viewed systematically in order to identify current approaches used for assessing quality decision making in HTA.

Data source

The description of the data source is as follows: Science Direct was the database; the language used for the review was limited to English and covered a three-year period from 2015- April 2017. This goes to show the proliferation of publications in this area.

Selection procedure

The first stage of the selection procedure was searching for relevance and duplication of the titles and abstracts resulting from this search. To make sure nothing was left behind, the full text of all titles/abstracts that appeared to meet the inclusion/exclusion criteria were obtained. In the next stage, the articles were screened and literature was obtained by checking the references of the included articles as well as by searching the gray literature.

Results

For clarity, the principal results are presented in three parts:

- Part 1: Selected articles for review
- Part 2: Known techniques for evaluating quality of decision making
- Part 3: Measurement properties of the techniques

Selected articles for review

A crucial part of any research is analysis. Based on this several authors have suggested the future development of HTA will highly be dependent on multi-criteria decision analysis (MCDA) (Devlin & Sussex, 2015; Diaby & Goeree, 2014; Goetghebeur et al., 2010; Gurtner, 2014; Ivlev, Kneppo, & Bartak, 2014; Thokala & Duenas, 2012). In the hospital context, multiple criteria must be considered simultaneously when deciding whether to adopt new medical devices and the analytical algorithm needs to be structured and transparent about how decisions are reached; when applying this method, MCDA will have an advantage over traditional decision-making processes (Martelli et al., 2016). Now, based on the concept of mini-HTA and applying relevant decision criteria to medical devices for individual patient use inspired from the Matriz4value model, we developed the IDA ('innovative device assessment') a tool for supporting decision making. Combining MCDA and HTA apparently results in fairness of the priority setting process. This is an essential condition for an ethical HTA algorithm: Accountability for reasonableness.

In 2016, Martelli et al., investigated combining multi-criteria decision analysis with mini-health technology assessment. In their method, criteria for assessing medical devices were identified from a literature review and a survey of 18 French university hospitals. Now it was time to start the testing phase of any investigation so the IDA tool was applied to two new drug-eluting beads (DEBs) for ranscatheter arterial chemoembolization (Martelli et al., 2016).

The results show the IDA tool holds five criteria and weights for each of two over-arching categories: risk and value. It came to attention that the two new DEBs granted no additional value relative to DEBs currently available. All that being said, feedback from decision-makers about the IDA tool was very positive. This tool can help HTA decision-making in French universities benefit a great deal in terms of structure and transparency (Martelli et al., 2016).

In 2016, Worthly et al., were trying to describe community views and perspectives on public engagement processes in HTA decision-making but this time in Australia (Wortley, Tong, & Howard, 2016).

In order for them to conduct this research, six focus groups were held in Sydney (NSW, Australia) as part of a broad program of work on public engagement and HTA. There were 58 participants

in the focus groups and they had a variety of age between 19 to 71 years.

Feedback from the public suggested they wanted a diversity of individuals in public engagements in HTA; they also wanted independence and transparency, involved individuals early in the process and insurance that public input is meaningful and useful to the process (Wortley, Tong, et al., 2016).

This was consistent with the public participation algorithm. A few things were identified here: the perceived shortcomings of the current public engagement process, in particular the lack of awareness of the HTA system when viewing it in the general population and necessary acknowledgment of the role different groups of stakeholders or 'publics' can have in the process (Wortley, Tong, et al., 2016).

HTA organizations in Australia have not been well established and this is because uptake of public engagement approaches has fell behind other comparable international HTA decision-making even though the Australia has had a leading role in HTA methodology. The very fact that public expectations are rising, especially around access to high-cost drugs and maintenance of fair and equitable system, means that it is essential to have input beyond that of an individual consumer spokesperson (Wortley, Tong, et al., 2016).

In 2016, Wortley et al., was conducting a review. The reason for conducting this review was to understand and theorize people who governed the choice of public engagement type by HTA organizations (HTAOs). One thing that was very interesting to us was finding the answer as to why for some HTAOs people refuse to undertake public engagement approaches that have been proposed by HTA stakeholder groups (Lopes, Street, Carter, & Merlin, 2016) or conducted by our researchers so they can address questions in the health technology policies (Wortley, Street, Lipworth, & Howard, 2016).

By now, it is clear that the goal of this paper is not describing how public engagement is or should be conducted. Our goal is to provide an algorithm to examine where and when HTAOs might use public engagement and what other factors they might consider, including the tensions and trade-offs inherent in their choice of method (Sarrami-Foroushani, Travaglia, Debono, & Braithwaite, 2014). Interpretative hermeneutic analysis (Smith, 2011) was used for this approach. It also opens the window for development though an iterative and interpretive approach and what this means is the acknowledgment of the lens of the researcher within the analytic process-as in this case all authors have worked in association with HTAOs and/or on projects related to HTA decision-making (Wortley, Street, et al., 2016).

However, despite what level of accuracy these results have it cannot be seen as a universal or ideal approach to public engagement into HTA procedures. While there are multiple methods, HTAOs focus have tightened by considering only a limited range of approaches. It appears four main entities guide the engagement type used by contemporary HTAOs. The influence of these factors are not readily acknowledged by HTAOs. Instead, engagement is simply acknowledged as crucial and the desire of engagement by the public, the choosing process of which publics should be included, the appropriateness of the approach to reach the intended outcome or even how engagement should be tailored for particular technologies become irrelevant (Wortley, Street, et al., 2016).

In 2016, thokala et al., had an investigation about report 1 of the ISPOR MCDA Emerging good practices task force. They made the game changing discovery that MCDA can potentially support decision-making in health care. It improves clarity and consistency for making decisions and possibly, the accountability of public sector decision-makers. However, MCDA does not in any way replace judgments, its task is identifying, collecting and structuring the information by those making judgments for supporting the deliberative process. This process gives a bird's eye view of the full range of applications, a description of the key steps involved and a definition of MCDA. This can prove useful for people with limited knowledge of MDCA. The second MCDA task force report deepens even more by helping people choose the MCDA method as well as a useful practice guidelines checklist and recommendations. Designers and reviewers of MCDA applications in health care can find this very useful (Thokala et al., 2016).

In 2016, Schmitz et al., took a backward look towards recommendations conducted in Ireland that were fully reimbursed. The reason for conducting this analysis was demonstrating that cost effectiveness is not the only entity influencing reimbursement decisions in Ireland, instead it was the informal perspective that was the aim here: criteria that may have influenced reimbursement decisions in the past. The analysis shows that cost effectiveness is not the only entity driving recommendations for or against reimbursement of technologies in Ireland. One conclusion that can be taken from all this is that, formally inclusion of criteria in the process need to be put on spotlight in order to improve clarity and ensure consistency (Schmitz, McCullagh, Adams, Barry, & Walsh, 2016).

In 2016, Donelan et al., describes that the evaluation for quality decision-making comes from the development of the Quality of Decision-Making Orientation Scheme QoDoS instrument. 29 experienced individuals in the field of decision-making participated in semi-structured interviews

about decision-making. Thematic analysis of the transcribed interviews was carried out by using NVivo8 software. An expert panel conducted the content validity with the help of qualitative and quantitative data, which led to the developmental version of the QoDoS. At the end of the day, the QoDoS is both reliable and valid for use. Pharmaceutical industries and regulatory authorities use the QoDoS extensively for making medicine. It can also be used in optimizing the quality of decision-making processes and inform decision-makers of the factors that play a role in decision-making (Donelan, Walker, & Salek, 2016). In 2017, Oortwijn et al., was investigating how well people on a worldwide scale comprehend health technology assessment (HTA) practices. He was also looking into a way to formulate recommendations for enhancing legitimacy and justice in related decision-making processes. As mentioned before HTA, processes are used in other countries and according to the algorithm that they have developed and used when it comes to comparison, the HTA processes in Argentina and South Korea are at an early stage. HTA systems in Canada, Scotland and England are almost on the same framework level as ours and Australia, Germany and France follow them. The HTA processes in Brazil and Thailand are in an intermediate position. Thus, because the framework level of countries like England, Australia, Canada, France, Germany and Scotland, they seem to perceive the same thing we do for a best practice, compared with countries that have a relatively shorter history in HTA.

(Argentina, Brazil, South Korea, and Thailand) (Oortwijn, Determann, Schiffers, Tan, & van der Tuin, 2017). In countries with high-income the main objective is improving the HTA processes in terms of broader stakeholder involvement and increased clarity of the processes. Now, looking at the middle-income countries (Argentina and Brazil), there is an extra focus which consists of enhancing capacity building and standardization of methods/development of guidelines. As stated by (Kaló et al., 2013) decision-making processes in middle-income countries quite often are not equipped with clear framework for implementation of HTA results. Even in countries with powerful HTA activities and explicit processes in place, the processes need to be continuously reviewed for an appropriate use of HTA in health care decision-making, both in policy and in practice. This requires strong support from policy makers (Oortwijn et al., 2017).

In 2017, Laticia et al., had been conducted. This was a multi-sectional survey with common threads among central, Eastern and South Europe experts working in positions related to HTA and decision-making processes at institutional level. The goal of

the survey was key informants (key persons representing organizations involved in HTA and/or pricing and reimbursement of medicines) in the selected countries. The outcome of this survey put a spotlight on the quality of diversity in the use of HTA. A few aspects of HTA are mounted in place in the mentioned countries. While some authorities only compare the value derived from health processes in health technologies, others factor in the differences in resource use, associated to the health technologies. However, in general, most of these systems are not easily understandable nor do they have enough clarity. In addition, in other countries, there is no defined structure that assumes the assessment function nor legislation supporting HTA (García-Mochón et al., 2017).

This study shows that a number of CESEE countries have created formal decision-making processes for which HTA is used. However, there is much heterogeneity related to the degree of development of HTA structures, and the methods and processes followed. These findings can assist both national policymakers and/or international donors in the analysis of needs and the planning of actions to be taken to strengthen regional HTA capacity and systems. Although the response rate was relatively low, most of the countries from which responses were not obtained did not have a clearly defined HTA process (García-Mochón et al., 2017).

Conclusion

This research opened up a small amount of research in the development and review of decision-making from a medical perspective but more importantly in the area of HTA. This applies to the progress and methodical application of techniques for making evaluations on quality decision-making that has no concordance on a golden standard. This review found 13 different techniques all of which are 100% useful for maintain the quality of decision-making conducted by pharmaceutical companies, regulatory authorities and HTA agencies in order to enable a more consistency and clarity at the end of the process. Although some of these techniques are very reliable from a scientific perspective and tested using sturdy and powerful methodologies, most of them do not have a flexible capability to be applied across companies, regulatory authorities and HTA agencies and only a handful have shown to be applicable for measuring decision-making in individuals and organizations against all 10 QDMPs. Without doubt, maintaining the quality of decision-making with the help of typical techniques can open up a clear dialogue of the current problems in decision-making in the boundaries of three stakeholders. As a result, this process of maintenance will use trust and

understanding as baselines for the common and specific issues to the stakeholders. Reviewing the techniques and instruments have shown there's a need for more clarity on how some of them were developed, as well as more testing and typical application for the most promising techniques.

Out of the 13 techniques reviewed, 2, Organizational IQ and QoDoS, have been identified as the most promising, as they conform to all 10 QDMPs. Unlike Organizational IQ, which can only be used in pharmaceutical industry from an organizational perspective, QoDoS has the ability to grasp the problems of companies and agencies alike, in addition to its evaluation of both individuals and their perception of their organizations. By these standards QoDoS can be qualified relatively the most efficient measure to the other techniques identified. The next steps would be to test further validity, sensitivity and reliability of QoDoS across the relevant stakeholders.

In conclusion, the benefit of systematic maintenance for the quality of decision-making with the help of QoDoS is to heighten attention towards biases and distractions also best practices. However, the benefits do not stop here, it can also measure change in a certain amount of time to quantify the impact of improvement initiatives.

Furthermore, quality measurements such as this will enable trust, consistency, clarity and timeliness to be built into critical decisions in medicines development, regulatory review and HTA.

References

- [1] Anderson, J., Richard, H., & Thaler, C. R. (2010). Nudge: Improving Decisions about Health, Wealth, and Happiness. *Economics and Philosophy*, 26(3), 369.
- [2] Banta, H., Behney, C., & Andrudid, D. (1978). Assessing the efficacy and safety of medical technologies. Washington: Office of Technology Assessment.
- [3] Blenko, M. W., Mankins, M. C., & Rogers, P. (2010). *Decide & deliver: 5 steps to breakthrough performance in your organization*: Harvard Business Press.
- [4] Buchanan, L., & O Connell, A. (2006). A brief history of decision making. *Harvard business review*, 84(1), 32.
- [5] Bujar, M., Donelan, R., McAuslane, N., Walker, S., & Salek, S. (2016). Assessing the Quality of Decision Making in the Development and Regulatory Review of Medicines Identifying Biases and Best Practices. *Therapeutic Innovation & Regulatory Science*, 2168479016662681.
- [6] Bujar, M., McAuslane, N., Walker, S. R., & Salek, S. (2017). Evaluating Quality of Decision-Making Processes in Medicines' Development, Regulatory Review, and Health Technology Assessment: A Systematic Review of the Literature. *Frontiers in Pharmacology*, 8.
- [7] Cherny, N. I., Sullivan, R., Dafni, U., Kerst, J. M., Sobrero, A., Zielinski, C., . . . Piccart, M. J. (2015). A standardised, generic, validated approach to stratify the magnitude of clinical benefit that can be anticipated from anti-cancer therapies: the European Society for Medical Oncology Magnitude of Clinical Benefit Scale (ESMO-MCBS). *Annals of Oncology*, mdv249.
- [8] Devlin, N., & Sussex, J. (2015). Incorporating multiple criteria in HTA: methods and processes. Office of Health Economics. 2011.
- [9] Diaby, V., & Goeree, R. (2014). How to use multi-criteria decision analysis methods for reimbursement decision-

- making in healthcare: a step-by-step guide. *Expert review of pharmacoeconomics & outcomes research*, 14(1), 81-99.
- [10] Donelan, R., Walker, S., & Salek, S. (2016). The Development and Validation of a Generic Instrument, QoDoS, for Assessing the Quality of Decision Making. *Frontiers in Pharmacology*, 7, 180. doi: 10.3389/fphar.2016.00180
- [11] Dowding, D., & Thompson, C. (2003). Measuring the quality of judgement and decision-making in nursing. *Journal of advanced nursing*, 44(1), 49-57.
- [12] Drummond, M. F., Schwartz, J. S., Jönsson, B., Luce, B. R., Neumann, P. J., Siebert, U., & Sullivan, S. D. (2008). Key principles for the improved conduct of health technology assessments for resource allocation decisions. *International journal of technology assessment in health care*, 24(03), 244-258.
- [13] Food, & Administration, D. (2013). Structured approach to benefit-risk assessment in drug regulatory decision-making. Draft PDUFA V Implementation Plan-February 2013; Fiscal Years 2013-2017.
- [14] Gagnon, M.-P. (2014). Hospital-based health technology assessment: developments to date. *Pharmacoeconomics*, 32(9), 819-824.
- [15] García-Mochón, L., Balbino, J. E., de Labry Lima, A. O., Martínez, A. C., Ruiz, E. M., & Velasco, R. P. (2017). HTA and decision-making processes in Central, Eastern and South Eastern Europe: Results from a survey. *Health Policy*.
- [16] Garrido, M. V. (2008). Health technology assessment and health policy-making in Europe: current status, challenges and potential: WHO Regional Office Europe.
- [17] Goetghebeur, M. M., Wagner, M., Khoury, H., Rindress, D., Grégoire, J.-P., & Deal, C. (2010). Combining multicriteria decision analysis, ethics and health technology assessment: applying the EVIDEM decisionmaking framework to growth hormone for Turner syndrome patients. *Cost Effectiveness and Resource Allocation*, 8(1), 4.
- [18] Guo, J. J., Pandey, S., Doyle, J., Bian, B., Lis, Y., & Raisch, D. W. (2010). A review of quantitative risk-benefit methodologies for assessing drug safety and efficacy—report of the ISPOR risk-benefit management working group. *Value in Health*, 13(5), 657-666.
- [19] Gurtner, S. (2014). Making the right decisions about new technologies: a perspective on criteria and preferences in hospitals. *Health care management review*, 39(3), 245-254.
- [20] Hammond, J., Keeney, R., & Raiffa, H. (2015). *Smart choices: A practical guide to making better decisions*: Harvard Business Review Press.
- [21] Hassanzadeh, S., Gourc, D., Marmier, F., & Bougaret, S. (2011). Decision-making in R&D projects, a framework based on fuzzy logic. Paper presented at the International Conference on Production Research.
- [22] Ivlev, I., Kneppo, P., & Bartak, M. (2014). Multicriteria decision analysis: a multifaceted approach to medical equipment management. *Technological and Economic Development of Economy*, 20(3), 576-589.
- [23] Kahneman, D. (2011). *Thinking Fast and Slow* London: Penguin.
- [24] Kaló, Z., Bodrogi, J., Boncz, I., Dózsa, C., Jóna, G., Kövi, R., . . . Sinkovits, B. (2013). Capacity building for HTA implementation in middle-income countries: the case of Hungary. *Value in Health Regional Issues*, 2(2), 264-266.
- [25] Le Polain, M., Franken, M., Koopmanschap, M., & Cleemput, I. (2010). Drug reimbursement systems: international comparison and policy recommendations. *Health Services Research (HSR), KCE Reports C*, 147.
- [26] Leonard, T. C. (2008). Richard H. Thaler, Cass R. Sunstein, *Nudge: Improving decisions about health, wealth, and happiness*. *Constitutional Political Economy*, 19(4), 356-360.
- [27] Lopes, E., Street, J., Carter, D., & Merlin, T. (2016). Involving patients in health technology funding decisions: stakeholder perspectives on processes used in Australia. *Health expectations: an international journal of public participation in health care and health policy*, 19(2), 331.
- [28] Lovallo, D., & Sibony, O. (2010). The case for behavioral strategy. *McKinsey Quarterly*, 2(1), 30-43.
- [29] Martelli, N., Hansen, P., van den Brink, H., Boudard, A., Cordonnier, A.-L., Devaux, C., . . . Borget, I. (2016). Combining multi-criteria decision analysis and mini-health technology assessment: A funding decision-support tool for medical devices in a university hospital setting. *Journal of biomedical informatics*, 59, 201-208.
- [30] Matheson, D., & Matheson, J. E. (1998). *The smart organization: Creating value through strategic R&D*: Harvard Business Press.
- [31] Morton, A., Airoidi, M., & Phillips, L. D. (2009). Nuclear risk management on stage: a decision analysis perspective on the UK's Committee on Radioactive Waste Management. *Risk analysis*, 29(5), 764-779.
- [32] Oortwijn, W., Determann, D., Schiffers, K., Tan, S. S., & van der Tuin, J. (2017). Towards Integrated Health Technology Assessment for Improving Decision Making in Selected Countries. *Value in Health*.
- [33] Rogowski, W. H., Hartz, S. C., & John, J. H. (2008). Clearing up the hazy road from bench to bedside: a framework for integrating the fourth hurdle into translational medicine. *BMC health services research*, 8(1), 194.
- [34] Sarrami-Foroushani, P., Travaglia, J., Debono, D., & Braithwaite, J. (2014). Implementing strategies in consumer and community engagement in health care: results of a large-scale, scoping meta-review. *BMC health services research*, 14(1), 402.
- [35] Schmitz, S., McCullagh, L., Adams, R., Barry, M., & Walsh, C. (2016). Identifying and Revealing the Importance of Decision-Making Criteria for Health Technology Assessment: A Retrospective Analysis of Reimbursement Recommendations in Ireland. *Pharmacoeconomics*, 34(9), 925-937. doi: 10.1007/s40273-016-0406-z
- [36] Smith, J. A. (2011). Evaluating the contribution of interpretative phenomenological analysis. *Health psychology review*, 5(1), 9-27.
- [37] Sorenson, C., Drummond, M., & Kanavos, P. (2008). Ensuring value for money in health care: the role of health technology assessment in the European Union: WHO Regional Office Europe.
- [38] Taylor, R., Drummond, M., Salkeld, G., & Sullivan, S. (2004). Inclusion of cost effectiveness in licensing requirements of new drugs: the fourth hurdle. *BMJ: British Medical Journal*, 329(7472), 972.
- [39] Thokala, P., Devlin, N., Marsh, K., Baltussen, R., Boysen, M., Kalo, Z., . . . 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), 1-13. doi: <https://doi.org/10.1016/j.jval.2015.12.003>
- [40] Thokala, P., & Duenas, A. (2012). Multiple criteria decision analysis for health technology assessment. *Value in Health*, 15(8), 1172-1181.
- [41] Wilsdon, T., & Serota, A. (2011). *A comparative analysis of the role and impact of health technology assessment*. London: Charles River Associates.
- [42] Wortley, S., Street, J., Lipworth, W., & Howard, K. (2016). What factors determine the choice of public engagement undertaken by health technology assessment decision-making organizations? *Journal of Health Organization and Management*, 30(6), 872-890. doi: doi:10.1108/JHOM-08-2015-0119
- [43] Wortley, S., Tong, A., & Howard, K. (2016). Community views and perspectives on public engagement in health technology assessment decision making. *Australian Health Review*.