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The need for health economic model guidelines in South Africa

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There are currently no guidelines in South Africa for effective decision making towards improving the health status of the population and ensuring fair and equitable resource allocation. This is because of the absence of a local health technology assessment (HTA) body and/or standardised framework for such assessments. Guidelines exist globally; however shortcomings include that they fail to make explicit allowance for rationing of care because of the affordability constraints.

Contribution: This article highlights the dire need for effective implementation of health economics guidelines to ensure the best possible health outcomes within the affordability constraints present in the South African context.

Keywords: health economics; health technology assessment; The National Institute for Clinical Excellence; NICE; health economics best practice.

Introduction

The healthcare sector in South Africa mirrors deep inequalities systemic in all sectors of the country because of the apartheid era (Ataguba & McIntyre 2012). The private, for-profit healthcare sector is well resourced and caters to a population that tends to be wealthier, more urban and more likely to be formally employed. The public sector, catering to the majority of South Africans, faces lower human-resourcing ratios, financial constraints, and ageing infrastructure (Ataguba & McIntyre 2012; Ranchod et al. 2017). Limited resources that can be allocated to healthcare means that the need exists to establish a framework for healthcare resource allocation on a fair and equitable basis (Plaks & Butler 2012).

Many countries have established a formal health technology assessment (HTA) programme or are considering the feasibility of establishing HTA intelligence to inform health policymaking (Paris & Belloni 2013).

This article explores international approaches to utilising HTAs and specifically approaches to health economics applications, identifies the limitations associated with these approaches and investigates the applicability of these approaches in the South African context.

What is health technology assessment?

Health technology assessment is a method of evidence synthesis that considers evidence regarding clinical effectiveness, safety, economics and, when broadly applied, includes social, ethical, and legal aspects of the use of health technologies (O'Donnell et al. 2013). The precise balance of these inputs depends on the purpose of each individual HTA. A major use of HTAs is in informing reimbursement and coverage decisions ('is it worth it?'), in which case HTAs should include benefit-harm assessment and economic evaluation (O'Donnell et al. 2013; Sloan & Hsieh 2017).

What is health economics?

Choi, Lai and Lai (2016) introduce health economics (a subset of HTAs) as one of the main emerging fields of economics. Health economics is a growing discipline within general applied microeconomics; however, rather uniquely, health economics is widely taught outside of economics departments (Choi et al. 2016; Sloan & Hsieh 2017). The health sector is seldom perceived through economic lenses; instead, it is argued that rather than focusing on profitability and sustainability, healthcare should be considered as a basic human right (Mcpake et al. 2020; Plaks & Butler 2012). This perception is, in general, a result of a misunderstanding of economics,

a field predominantly focused on understanding better choices and in particular making the best use of existing resources and growth in the availability of resources to achieve optimal outcomes (Mcpake et al. 2020).

The health economics discipline aims to address core challenges associated with the healthcare system such as optimal medical goods and services allocation; medical goods and services production; and the most effective mechanisms to deliver medical goods and services (Choi et al. 2016).

Health economics has a strong relationship with behavioural sciences and is used to inform health policy and health services research (Fuchs 1999). It is believed that consumers should incorporate opportunity cost into every decision they make; however, behavioural research suggests consumers rarely do this in practice (Spiller 2011). Rationing approaches should therefore be considered when making healthcare-related decisions, and an appropriate rationing methodology should make explicit allowance for opportunity cost evaluation. This enables a thorough understanding of the most highly valued of the rejected alternatives or opportunities.

The importance of explicitly making allowance for rationing techniques is amplified in the healthcare context because consumers are seldom the payers and the payers often operate within a pooled environment (McLeod & Ramjee 2007).

Health economists have therefore focused on assessing how to maximise the impact on health and equity within resource constraints (Mcpake et al. 2020). In economics, it is recognised that choices must be made – it is not possible to get everything you want because of limited resources requiring that trade-off decisions need to be made (Mcpake et al. 2020). Formal cost-effectiveness studies are an important part of HTAs intended to help decision makers optimise healthcare spending by basing decisions on value for money (Salem et al. 2008).

Cost-effectiveness

Health economics currently plays a key role in cost-benefit, cost-effectiveness, cost-minimisation, cost-of-illness and cost-utility analyses (Rawlins, Barnett & Stevens 2010). The incremental cost-effectiveness ratio (ICER) is the industry preferred method to inform health-economics-based decision making (Rawlins et al. 2010; Taylor 2016).

A common application of the ICER is in cost-utility analysis, in which case the ICER is synonymous with the cost per quality-adjusted life year (QALY) gained (Taylor 2016).

The ICER can be estimated as follows in Equation 1:

$$ICER = \frac{C_1 - C_0}{E_1 - E_0} \qquad \text{[Eqn 1]}$$

where C_1 and E_1 are the cost and effect in the intervention group, and C_0 and E_0 are the cost and effect in the control care group. Costs are usually described in monetary units, while effects can be measured in terms of health status or another outcome of interest (Taylor 2016).

Different measurement tools to determine utility can provide systematically different answers (Taylor 2016). Some measures that are more specific to a given condition can also be considered; in particular, many systems assume all QALYs are valued equally regardless of who receives them or when they are received (Taylor 2016).

Health economics globally

In countries where healthcare is primarily financed through government funding, or some system of funding that is heavily regulated by government, a system of allocating resources to take account of differences in needs in different parts of the population is common (Eldessouki & Smith 2012). The most common approach is for allocation to be based on the population, weighted for generalised need factors such as age, gender and morbidity. The allocations are then proportionate to the measures of need (Mcpake et al. 2020). This approach has done much to weight funding towards those with worse health (Mcpake et al. 2020). However, there are obvious problems, because it is not clear that the appropriate level of funding should be proportionate to a particular measure of need, illustrating a difficulty in making a decision to apply social solidarity principles effectively (Taylor 2016).

Health economic guidelines

Method

Because of the nature of the research question, a qualitative research design has been utilised following an exploratory purpose. This is a meta-synthesis approach using the Bates (1989) berry-picking model. Meta-synthesis attempts to integrate results from a number of different, but inter-related, qualitative studies. The technique has an interpretive, rather than aggregating intent in contrast to meta-analysis of quantitative studies (Walsh & Downe 2006).

The literature review has been conducted utilising the following keywords: health economics, National Institute for Clinical Excellence (NICE), ISPOR, health technology assessment, health economics best practice.

International Society for Pharma-co-economics and Outcomes Research

The International Society for Pharmacoeconomics and Outcomes Research (ISPOR), founded in 1995,[1] is the leading professional society for Health Economics and Outcomes Research (HEOR) globally (Ramsey et al. 2005). The society's mission is to promote HEOR excellence to improve decision making for health globally.[2]

1. Visit: https://www.ispor.org/about/our-society

2. Visit: https://www.ispor.org/about

TABLE 1: Healthcare resourcing in the total private and public healthcare system (2015 data).

Country	Healthcare expenditure per capita PPP (US $)	Hospital beds per 1000 people	Physicians per 1000 people	Nurses and Midwives per 1000 people	Specialist surgical workforce per 100 000 people
South Africa	499.36	2.30	0.800	5.000	11.00
LMICs					
Brazil	782.52	2.15	2.158	9.076	34.74
India	58.00	0.58	0.680	2.080	6.82
Chile	1 133.28	2.14	2.159	11.040	59.32
Welfare countries					
UK	4 433.86	2.61	2.773	8.380	133.30
Australia	5 322.97	3.82	3.505	12.260	72.58
Canada	4 677.83	2.62	2.539	9.900	35.29

Note: Current health expenditure (% of GDP): https://data.worldbank.org/indicator/SH.XPD.CHEX.GD.ZS. Physicians (per 1000 people) – Australia: https://data.worldbank.org/indicator/SH.MED.PHYS.ZS?locations=AU.

LMIC, low-middle income countries.

The Consolidated Health Economic Evaluation Reporting Standards (CHEERS) statement is an attempt to consolidate and update previous health economic evaluation guidelines into one current, useful reporting guidance (Husereau et al. 2013). The aim of the CHEERS statement is to provide recommendations in a checklist to optimise reporting of health economic evaluations into a single useful reporting standard. (Husereau et al. 2013).

This is necessary because in various OECD countries, many bodies responsible for HTA processes have been established (Paris & Belloni 2013). These bodies can generally be separated into bodies responsible for: assessment, reimbursement decisions, and pricing decisions (Paris & Belloni 2013).

The CHEERS reporting standard is not intended to prescribe how economic evaluations should be conducted; rather, analysts should have the freedom to innovate or make their own methodological choices (Husereau et al. 2013).

The seminal work conducted by Walker et al. (2012) identified that several well-developed checklists exist for investigators, reviewers, and journal editors to use in order to ensure that economic evaluations will be more informative and transparent and therefore of a higher quality. The comparison of instruments showed that health economic evaluations mainly analyse similar items and there seems to be strong consensus about some important indicators of quality; however, there seems to be a lack of consensus about the relative importance of economic identification, outcome valuation, independence of investigators, and ethics and distribution of effects (Walker et al. 2012). This suggests areas for future research as these tools continue to improve over time.

Three low-middle income countries (LMICs) and three welfare countries (characterised by advanced social security systems) have been selected to form the basis of the literature review because of similarities linked to the South African system. The selected LMICs are Chile, India and Brazil and the selected welfare countries are the United Kingdom, Australia and Canada. The selected LMICs face similar health infrastructure challenges to South Africa, while the selected welfare countries use a Universal Healthcare Coverage (UHC) model to make healthcare services available to all citizens in the public sector with the option to receive treatment in the private sector – which is similar to South Africa currently (Harris et al. 2011).

South Africa is contemplating the implementation of a National Health Insurance (NHI) framework.[3] The role of the private sector in the NHI system will change over time as once the NHI fund is fully implemented, medical schemes will not be permitted to cover the same benefits. South Africa will thus move to a complementary NHI model similar to the United Kingdom and Australia.[4] This approach differs from that taken by Canada, which uses a supplementary model (Ngwaru et al. 2019).

An overview of resourcing in the healthcare systems of these respective countries is provided in Table 1 based on data published by the World Bank.

Table 1 illustrates that there is greater rationing required in LMICs because of relative resource constraints. South Africa exhibits lower levels of resource availability than the UK and Australia, with all metrics being significantly lower than the welfare countries listed. South Africa has the second lowest healthcare expenditure per capita with physicians, nurses and midwives per 1000 people, and the specialist surgical workforce per 100 000 people being only slightly higher than India.

Health economics and health technology assessment

The section below investigates HTA adoption and maturity in the low-middle income countries and welfare states considered in Table 1.

3.NHI White Paper (https://www.gov.za/sites/default/files/gcis_document/201512/39506gon1230.pdf)

4.Visit: https://www.health.gov.za/wp-content/uploads/2024/05/Leaflet-5-NHI-FAQs-What-role-do-medical-schemes-play-in-the-NHI.pdf

Low-middle income countries

Low-middle income countries use several HTA policies to inform healthcare resource allocation.

Brazil

Interest in HTA in Brazil began in the mid-1980s (Paris & Belloni 2013). In the years 2000–2008, the Department of Science and Technology was established, and later joined the International Network of Agencies in HTA (Paris & Belloni 2013).

Currently, the use of HTA in Brazilian healthcare resource allocation is relatively advanced with the main focus in the past decade lying with integration of big data linkage initiatives. Current challenges are consistent with global trends and centre around the determination and use of cost per QALY thresholds (Taylor 2016).

India

India is still in the process of implementing HTA as a decision making tool in budget allocation (Downey et. al. 2017). Current challenges include minimal HTA expertise, weak health data infrastructure, rising healthcare costs, fragmented healthcare systems and significant growth in non-communicable diseases (Downey et al. 2017).

Chile

One of the most important milestones in recent years for the development of HTA in Chile was the formation of the National Health Technology Assessment Council in the Chilean Ministry of Health (Antonio, Espinoza & Alcayaga 2015). Current challenges include an inadequate integrated health management information system (Antonio et al. 2015).

Welfare states

The health care systems in Canada and the United Kingdom are based on a single-payer system with private health insurance playing a complementary role, rather than a multiple-payer system like that of the current private South African system (Ataguba & McIntyre 2012; Mcleod & Ramjee 2007; Harris et. al. 2011). Canada, Australia and the UK use HTA bodies to inform reimbursement decisions for healthcare interventions funded from public resources (Paris & Belloni 2013).

United Kingdom

The NICE is known for its rigour in reviewing novel treatments and its cost-effectiveness driven methodologies for determining a treatment's benefit to the healthcare system utilising ICER approach (Taylor 2016).

Australia

Australia has a comprehensive system of universal public health insurance for medical services and drugs (Harris et al. 2011).

The evidence-based clinical and economic evaluation system provides good, explicit information on the presence and size of the incremental benefits and costs associated with a new drug's potential listing for subsidy utilising the ICER methodology (Harris et al. 2011).

The industry has claimed that the cost-effectiveness and pricing system denies Australians access to needed drugs; indeed, a number of new drugs are not listed for subsidy because they fall above the acceptable threshold because of high initial prices of drugs still on patent at an early stage in the drug life-cycle (Harris et al. 2011).

Canada

Similar to Australia, Canada has a comprehensive national system of universal public health insurance for medical services (Harris et al. 2011). However, unlike Australia, out-of-hospital prescription medicines fall outside the boundaries of National Medicare and are considered a fiscal responsibility for each province (Harris et al. 2011).

Price negotiations for new medications are determined at a Federal level with the Patented Medicines Prices Review Board (PMPRB) (Harris et al. 2011). The PMPRB utilises an ICER approach to inform funding decisions.[5]

South Africa

Currently, there are no local HTA guidelines for South Africans to utilise and international guidelines cannot be directly applied to the South African context because of threshold determination needing to factor in affordability contraints applicable to South Africa (Gavaza et al. 2012).

MacQuilkan et al. (2018) identify five key barriers to strengthening and developing HTA systems: minimal HTA expertise, weak health data infrastructure, rising healthcare costs, fragmented healthcare systems and significant growth in non-communicable diseases.

Pharmacoeconomic guidelines have been developed by the National Department of Health (NDoH) for external submissions; however, this is voluntary and for regulation in the private sector (MacQuilkan et al. 2018). The NHI Bill of 2018 states that HTA will inform the health services package delivered under NHI and that a legislated entity, guided by a single national HTA policy, will facilitate coordination of HTA. Currently, no details have been provided about the HTA agency in relation to its position, scope or role in decision making (MacQuilkan et al. 2018)

The Health Market Inquiry (HMI) recognised the need to improve the regulatory environment governing suppliers and recommended the establishment of a dedicated supply-side regulator of health (SSRH) with four main functions: (1) facility planning (including licensing), (2)

5.https://www.canada.ca/en/patented-medicine-prices-review/services/consultations/draft-guidelines/draft-guidelines-2019.html

economic value assessments, (3) monitoring of services, and (4) pricing.[6]

There is therefore a clear need to establish a framework that takes the unique limitations of the South African context into account in line with HMI recommendations around pricing and economic value assessments.

Ethical clearance

Ethics clearance has been obtained for the project Adaptation of global HTA models for application in South Africa using analytics techniques from the Human Research Ethics Committee (non-medical) of the University of the Witwatersrand. Protocol number H22/04/30 (valid 22 April 2022 to 23 October 2025).

Results

In all six jurisdictions discussed, economic data are required and provide an essential part of information set during the decision making process. While clinical data have primacy in as far as a new less-effective drug is unlikely to be recommended (even if it is cost-saving), it is clear that health economics is one of multiple criteria being used in each decision (Harris et al. 2011).

The more direct the relationship between funding, pricing decisions and economic evidence, the more likely that economic data will influence the supply of healthcare (Harris et al. 2011).

Simple threshold ICER values are insufficient to address the question of efficient resource use because they assume, *inter alia*, a stream of unlimited resources with constant opportunity cost available for additional investment in healthcare (Taylor 2016).

This issue has been dismissed as one of affordability, something that is not considered by NICE when making judgements about cost-effectiveness (Rawlins & Culyer 2004). However, affordability is a key challenge associated with healthcare access (Ramjee 2013) and one that should therefore be incorporated into the health economics approaches at the very least in the South African context.

In the absence of rationing based on system-wide affordability considerations under current health economic guidelines in Brazil, Canada, Australia and the United Kingdom, recommendations emerging from the application of these guidelines are essentially value judgments about whether the estimated effects of a specific intervention are worth the estimated resource costs (Sculpher et al. 2004).

These approaches ignore the underlying principles of economics and undermine the economic basis of the recommendations, suggesting that this research be seen less as economic evaluation and more as 'just evaluation for decision-making' (Sculpher et al. 2004).

The adoption of international guidelines in the South African context would therefore need to make explicit allowance for economic evaluation given the affordability constraints prevalent in the South African market.

The most appropriate decentralisation of policymaking powers is, moreover, an important policy question for health systems that, to date, has remained largely unresolved and will need to be explored in future areas of research.

Conclusion

Various bodies exist to provide guidance on health technology assessment and health economic evaluation best practice. The type of guidance depends on the discipline under consideration and the jurisdiction within which one operates. The types of health outcomes considered by assessment bodies to inform decisions on reimbursement have more in common with each other than differences (Paris & Belloni 2013). Countries that do not use economic evaluations are also more likely to accept high prices in similar circumstances (Harris et al. 2011; Paris & Belloni 2013). Beyond these conclusions, it should be noticed that price is not the only component of value (Paris & Belloni 2013).

The market failings in healthcare appear to be insuperable despite repeated reform efforts. Information asymmetry, the agency relationship, moral hazard and increasing complexity push the market for health provision and insurance inexorably towards an environment where mutualism and social solidarity become increasingly difficult to attain. As global markets fail and governments intervene, reform efforts are introduced to reduce moral hazard and adverse selection; however, these interventions seem to be having little effect. However, the reforms continue.

Approaches to healthcare decision making differ; however, two main points are clear: (1) South Africa currently lacks a suitable approach to HTA that takes into account the specifics of the environment and (2) most, if not all, approaches thus far do not take affordability into consideration when building the health economics evaluation framework or guidelines.

This is a big gap given that healthcare financing is finite and resources are limited, and therefore optimal rationing of care and the need for appropriate expertise are essential factors to consider.

This article is part of a larger body of work on health economic evaluation. Future research will look into determination of the health economic guidelines for South Africa and will unpack a suitable means to incorporate affordability constraints into rationing mechanisms.

6.Visit: https://www.compcom.co.za/wp-content/uploads/2020/01/Final-Findings-and-recommendations-report-Health-Market-Inquiry.pdf

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Competing interests

The authors declare that they are employed by companies that may be affected by the research reported in the enclosed publication. They have disclosed those interests fully and have declared that the research is their own and has not been funded or influenced by their employers.

Authors' contributions

C.S. conceived of the presented idea and developed the theory. R.H. verified the analytical methods and supervised the findings of this work. Both C.S. and R.H. discussed the results and contributed to the final manuscript.

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Data availability

The authors confirm that the data supporting the findings of this study are available within the article.

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