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COMMENTARY

Health Preference Research: An Overview

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Health preference research (HPR) is dedicated to understanding the value of health and health-related goods and services. The mantra in HPR is "Choice defines value". With a better understanding of what patients want, providers, regulators, and policy makers can better meet the patient's needs. For this, researchers typically design and conduct discrete-choice experiments (DCEs), a survey method that quantitatively measures what people want. Unlike in ordinary consumption, choices regarding health are often difficult to observe, are infrequently made, and entail complex and challenging trade-offs (e.g., the quality vs. quantity of life). In DCEs, participants are asked to choose between discrete alternatives based on their preferences and the attributes of each alternative. The effect of the attributes on choice defines the value of health and health-related goods and services from the perspective of a target population. Subgroup analysis can be used to test for distinct preferences within groups (market segmentation). Preference estimates and segmentation results may be incorporated into cost-effectiveness analyses (CEAs), multi-criteria decision analyses (MCDAs), or shared decision making (SDM). This overview provides a brief introduction to the field's resources, challenges, terminology, and relevance.

1 Ensuring Good Practices in Health Preference Research (HPR)

With methodological advances and mounting interest, the number of published studies on HPR has grown exponentially over the past few years. It is not surprising that the quality of this research has varied as a result, which has led to multiple educational and research initiatives. In response, the International Academy of Health Preference Research (IAHPR) has launched the Health Preference Study and Technology Registry (HPSTR), which, similar to clinicaltrials.gov, serves as a public resource for advancing the quality, transparency, and dissemination of preference evidence.

Multiple textbooks exist on DCE methods in health; however, no text is currently available that reviews all HPR methods. Recently, the field has made great strides to improve its methods relating to preference heterogeneity, adaption, layout effects, and efficiency. However, the literature on the interpretation and implementation of preference evidence remains sparse. For example, little is known about how to turn preference evidence into support tools for preference-sensitive decisions or how to best communicate this evidence to stakeholders, clinicians, or regulatory authorities.

The relevance of preference evidence for decision making depends on its location along the continuum

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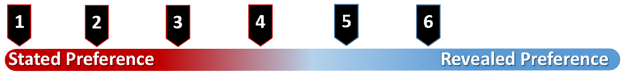
between stated preference and revealed preference (Fig. 1). The primary distinction is whether the choice directly affects the respondent's utility. Choices from a stated-preference task may have no direct effect on the respondent's utility, whereas choices from a revealed-preference task may have a direct effect (e.g., loss of consumption or health). Revealed-preference evidence may better represent the respondents' utilities but may be difficult (even unethical) to pursue within the context of a choice experiment. The markers represent examples of DCE ranked along the continuum; however, their exact locations are open to interpretation.

HPR studies conduct DCEs to inform a wide range of decisions across diverse populations (Table 1). Target populations for DCEs (the rows in Table 1) may include the general population, a subgroup (e.g., patients, providers, etc.), or a single individual. Applications of DCEs (the columns in Table 1) include preferences for goods and services, outcomes, or quality of life. Many applications are intrinsically linked, in that goods and services improve outcomes, which enhance quality of life. Although Table 1 displays distinct columns and rows, in practice, the categories typically overlap (e.g., the general population includes patients).

2 Collecting the Best Preference Evidence for the Decision of Interest

The alternatives within a DCE and its target population depend on the decision of interest. An HPR study may assess the preferences of the general population to help decide what health-related goods and services should be offered, taking the demands of its members or subgroups into account. Recommendations on screenings and preventive services are typically based on causal evidence regarding health outcomes (e.g., from clinical trials). HPR may inform these recommendations by summarizing the benefits of such goods and services from a societal perspective. Furthermore, governmental decisions to allocate societal resources may go as far as accounting for the preferences of taxpayers.



1. Adults choosing between alternative vaccinations strategies for children
2. Adults choosing between alternative health outcomes for themselves
3. Severely obese adults choosing between alternative bariatric devices
4. Hypertensive patients choosing between alternative goals for their treatment
5. Older adults choosing between alternative directives for advanced care planning
6. Consented patients choosing between treatments as part of a pragmatic trial

Fig. 1 Continuum of stated and revealed preference evidence with examples

Patient-centered studies may examine how to adjust goods and services to better meet patients' needs [1]. Treatments are typically evaluated based on causal evidence from clinical trials; as such, their value may best be summarized by incorporating the preferences of those who are most directly affected: patients. Similarly, it is important to understand the preferences of specific subgroups regarding relevant health outcomes (e.g., asking women about menopausal symptom relief) [2]. Provider-centered studies may examine how to adjust attributes of their work environments or roles to aid in their recruitment, performance, or retention.

Why ask an individual (i.e., a "sample of 1") about her or his health preferences? The answer is that knowing a person's participation and treatment preferences can greatly improve SDM; however, few decision aids formally elicit these preferences. Patients whose disease management plans align with their individual goals are more likely to achieve those goals. The failure to document a person's preferences (otherwise known as their advanced directives) may inhibit the medical system from meeting that individual's needs and may result in needless expenditures. Support tools for preference-sensitive decisions, such as decision aids and advanced care directives, can greatly increase patient engagement, improve patient satisfaction with medical care, and reduce overall costs [3].

3 How to Conduct HPR

HPR typically involves the design and implementation of DCEs. The two primary forms of DCEs are paired comparison and partial ranking. For each, a participant is

Table 1 Examples of how preference evidence informs health-related decisions

Target populations	Applications		
	Preferences for health-related goods and services	Preferences for health outcomes	Preferences for health-related quality of life
General population	Access, pricing, and commercialization	Recommendations on prevention and screening	Allocation of societal resources
Patients/providers	Designing services to improve uptake and adherence	Recommendations on treatment and care	Budget allocation within a system
Individuals	Shared decision making	Goal setting	Advanced care planning

shown two or more alternatives and asked, “Which do you prefer?”. A classic example of a paired comparison is a Hobson’s choice (e.g., take it or leave it). A partial ranking task has more than two alternatives (e.g., A, B, C, and D); therefore, its responses imply preferences that are related to more than two alternatives (e.g., [A] > [B or C or D], [A or B] > [C or D], or [A or B or C] > [D]). An example of a partial rank is triage (e.g., choosing what to order off a menu).

Within a DCE survey, the preference-elicitation tasks may be adaptive or non-adaptive. Adaptive DCEs use an algorithm (i.e., decision tree) to select subsequent tasks based on the response to a previous task; these are common in fields such as educational testing and medical diagnostics. For example, a respondent might be asked to select the “best case” followed by the “worst case” scenarios when given a set of alternatives (best–worst scaling) [4]. A full ranking is commonly derived using a series of adaptive partial rankings (e.g., picking the best and then next best, up to picking the worst) [5]. Most health-preference studies are non-adaptive because adaption requires incorporating the error from a previous response into the interpretation of a subsequent response (i.e., endogenous censoring). Adaptive methods can produce more sensitive responses, particularly at the individual level; however, these methods may lead to biased estimates [6].

The dependent variable in a health preference study is choice; the independent variables are the attributes and levels characterizing the alternatives. Each choice is discrete and does not capture the extent to which attributes matter to a respondent. Preference evidence is ordinal and refers to an individual’s inclination toward or away from a specific alternative in situations where there are alternative courses of action. Some researchers attempt to assess extent using qualitative methods as well as value clarification responses, visual analog scales, or equivalence statements [7]. This is largely considered ancillary evidence that may help to explain an individual’s preferences.

Econometric analysis yields estimated preference parameters (e.g., part-worth utilities estimated using a conditional logit model), which represent the influence of specific attributes or attribute levels on choices (i.e., choice defines value). These parameter estimates can be incorporated into CEAs, MCDAs, and SDM.

4 Where Can I Learn More About the State-of-the-Science in HPR?

To our knowledge, the first meeting dedicated to HPR was hosted over 40 years ago in Tucson, Arizona, USA, by the Hospital Research and Educational Trust [8]. Since then, multiple organizations and meetings have emerged in the USA and internationally. The IAHPR is a member-driven, inter-generational organization that promotes educational activities and research with respect to health and health-related preferences. In complement to IAHPR, many organizations, such as the EuroQol Group, the International Society for Quality of Life Research, the Society for Medical Decision Making, the International Health Economics Association, and the International Society for Pharmacoeconomics and Outcomes Research, all have special interest groups, sessions, and workshops devoted to topics related to HPR.

5 Concluding Thoughts

The purpose of HPR is to systematically identify what people want so that providers, regulators, and policy makers can better meet their needs. The field of HPR may revolutionize medical care by advancing the design, implementation, and individualization of prevention, screening, treatment, and control strategies in concordance with the preferences of those affected: the general population, patients, and providers. Its current challenges are to (1) ensure good practices in HPR, (2) collect the best preference evidence for the decision of interest, and (3) educate more researchers interested in HPR methods and evidence.

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Compliance with Ethical Standards

Conflict of interest Benjamin M. Craig, Emily Lancsar, Axel C. Mühlbacher, Derek S. Brown, and Jan Ostermann have no conflicts of interest.

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