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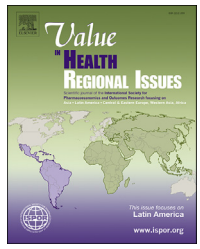

*Brief Report*

# Health Economics and Outcomes Research Knowledge Needs Assessment for Latin America

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ABSTRACT

**Background:** An increasing awareness of the importance of health economics and outcomes research (HEOR) skills has been reported in Latin America. There is, however, no published study directly assessing perceived knowledge levels and knowledge gaps on specific HEOR topics among professionals and students in the region. **Objectives:** To assess perceived HEOR knowledge levels and identify knowledge gaps in Latin America. **Methods:** An online needs assessment survey was developed to quantify perceived HEOR knowledge levels and identify knowledge gaps. Members of the International Society for Pharmacoeconomics and Outcomes Research in the Latin American region, regional chapters, and student chapter presidents were invited to participate in the survey. The survey, developed using the SurveyMonkey tool, was distributed to participants electronically. Data were extracted from the survey and analyzed using Microsoft Excel. Data analysis was conducted using descriptive statistics to summarize the survey respondents' demographic information, current and desired knowledge levels, and preferred method/format for delivery of educational training. **Results:** Survey responses were collected from 106 participants. The largest knowledge gap was calculated for methods for integrating medication adherence and persistence in health economic evaluations (mean = 2.30 ± 1.48). The smallest knowledge gap was calculated for types of healthcare costs (mean = 1.01 ± 1.17). Most respondents (74% [n = 66]) preferred to receive educational materials related to HEOR topics through online learning and continuing education programs. **Conclusions:** The knowledge gap assessment provided current knowledge gap perceptions among members of the International Society for Pharmacoeconomics and Outcomes Research in Latin America. The survey data collected support a need for developing educational programs for topics with the highest perceived knowledge gap.

***Keywords:*** HEOR, ISPOR, Latin America, survey

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## Introduction

Countries within Latin America arguably have a greater need to prioritize the use of resources that are scarcer than those available in developed countries.[1] An increasing awareness of the importance of health economics and outcomes research (HEOR) skills for evidence-based decision making has been reported in the region, and there are successful cases of country-led economic evaluations for health policy decision making.[1–3] The use of HEOR methods in Latin America is particularly important when one takes into account that many health technology assessment studies are not readily generalizable across jurisdictions and require a significant amount of adaptation or even complete reformulation.[1,4,5]

According to a systematic review that evaluated health economic evaluations pertaining to countries in the Latin American region, published studies present poor reporting and evidence of unfamiliarity with international HEOR guidelines, as illustrated by an absence of incremental analysis and of discounting long-term costs and effects in many publications.[1,6] Problems were present in both individual patient- and model-based economic evaluations.[1] In addition to that, the implementation and usage of health economic guidelines have been reported to be uneven in different countries.[7]

A previous survey that explored the gap between the perceived "relevance"of the HEOR key principle and reported application among researchers in the region has indicated that the level of application of HEOR methods was poor. Asymmetrical knowledge

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gaps in different countries were reported; the HEOR knowledge-level gap has, however, not been specifically assessed.[8]

Worldwide, the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) supports continuing education of pharmacoeconomics and current HEOR topics in the professional setting. ISPOR is actively involved in the development and advancement of continued learning programs in Latin American ISPOR regional chapters. Understanding the current HEOR knowledge-level gap can provide guidance on topics of interest for upcoming programs.

To our knowledge, there is no published study directly assessing the perceived knowledge levels and knowledge gaps on specific HEOR topics among professionals and students in Latin America. Therefore, we conceived the present study to quantify perceived and desired HEOR knowledge levels and to identify knowledge gaps among professionals and students in the region.

## Methods

### *Designs and Subject Selection*

A cross-sectional online needs assessment survey was conducted in 2017 to determine the educational needs of ISPOR members within Latin America regarding pharmacoeconomics and outcomes research.

A convenient sample strategy was used for identifying ISPOR members located in the Latin American region using the organization's database. In addition, ISPOR regional chapters and ISPOR student chapter presidents were invited to participate in the survey and share the survey link with other Latin American HEOR researchers. This project was conducted by the ISPOR Latin America Consortium Distance Learning and Good Research Practices Subcommittee and the University of Cincinnati. The survey was developed using the SurveyMonkey tool and distributed electronically to participants. All ISPOR members in the Latin American region were invited to participate in the survey (approximately a total of 484 individuals). Membership in the ISPOR Latin America Consortium Education Committee is not restricted to the geographical region and the committee currently has members from England, France, India, Malaysia, Pakistan, Portugal, Russia, Saudi Arabia, and the United States.

### *Instrument Development*

The survey included 3 parts aimed to quantify perceived HEOR knowledge levels and identify knowledge gaps (see Appendix in Supplemental Materials found at https://doi.org/10.1016/j.vhri.2018.10.006). Part 1 showed participants' demographic information including information about ISPOR membership, work environment, and education. Part 2 included 18 HEOR topics and asked the participant to rate perceived current and desired knowledge levels on subjects pertaining to HEOR. Part 3 consisted of 2 questions on preferred HEOR education and training delivery formats, requesting participants to provide feedback on preference toward learning formats and barriers encountered using web-based educational tools. The 18 items included in the knowledge gap assessment were derived from the main HEOR knowledge areas of the ISPOR Distance Learning Program (iDLP) curricula.[9] Knowledge areas are classified into 6 main topics: outcomes research methods, economic methods, modeling methods, patient-reported outcome methods, patient preference methods, and observational data methods (see Supplemental Materials found at https://doi.org/10.1016/j.vhri.2018.10.006).

### *Data Collection and Data Analysis*

A follow-up email was sent to participants 2 weeks after the initial request to participate in the survey. Participants were not compensated for taking part in this study; nevertheless, for those who provided an email address, a drawing was held to win a set of ISPOR textbooks with a focus on HEOR.

Data were extracted from the survey and analyzed using Microsoft Excel. A data analysis was conducted using descriptive statistics to summarize the survey respondents' demographic information, current and desired knowledge levels, and preferred method/format for delivery of educational training.

Participants rated current and desired knowledge levels on HEOR topics using a 5-point scale, with 0 indicating the lowest level and 5 the highest. The perceived knowledge gap value was calculated by obtaining the difference between the current and desired knowledge levels.

For all topics included in the HEOR knowledge assessment, the mean score for desired knowledge was reported in the range of 3 to 4, with 5 being the highest level of desired knowledge obtained. The knowledge gap was calculated using the desired and current knowledge scores.

Participation from survey participants was anonymous and voluntary. The survey took an estimated 5 to 10 minutes to complete. The study protocol and survey were approved by the University of Cincinnati Ethics Research Committee.

## Results

### *Participant Demographic Characteristics*

Responses were collected from 106 participants. The demographic characteristics of these participants are presented in Table 1. Most of the survey respondents (68%) were ISPOR members with a postgraduate degree. Only 4% of responses obtained were from individuals who did not have a graduate degree and were included in the study. In addition, 36% of respondents had been ISPOR members for 3 years or more, whereas 32% were members for less than 2 years. For further clarification, 32% of the respondents indicated that they were not an ISPOR member; nevertheless, to receive this survey, the recipient should have been associated with ISPOR. Members residing in Brazil, Colombia, and Mexico

**Table 1 – Demographic characteristics of survey respondents (N = 106).**

| Characteristic | n | % |
|---|---|---|
| Sex | | |
| Female | 50 | 47 |
| Male | 55 | 52 |
| Prefer not to answer | 1 | 1 |
| Age (y) | | |
| 25-34 | 24 | 23 |
| 35-44 | 34 | 32 |
| 45-54 | 22 | 21 |
| 55-64 | 24 | 23 |
| ≥65 | 2 | 2 |
| Education | | |
| High school degree or equivalent | 1 | 1 |
| Bachelor's degree | 3 | 3 |
| Postgraduate degree (MS or MBA) | 66 | 62 |
| Postgraduate degree (PhD) | 36 | 34 |
| ISPOR membership | | |
| I am not an ISPOR member | 34 | 32 |
| <1 y | 12 | 11 |
| 1-2 y | 22 | 21 |
| ≥3 y | 38 | 36 |

ISPOR indicates International Society for Pharmacoeconomics and Outcomes Research.

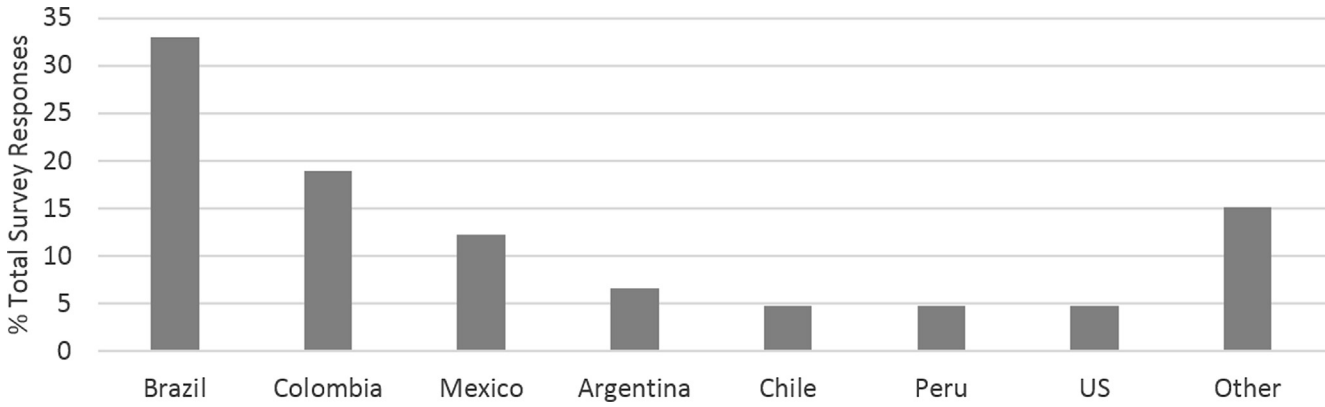


**Fig. 1 – Survey response by country.**

provided the most survey responses (Fig. 1). Survey responses were obtained from Latin American ISPOR members, who may have, however, resided in a geographical location outside of the Latin American region. Age and sex were equally represented in the responses received.

### *Knowledge Assessment*

The perceived current and desired knowledge scores for HEOR topics are presented in Table 2. Survey responses were excluded from the analysis if the desired knowledge score was lower than the current (n = 5) or the survey was incomplete (n = 14). The areas with the lowest score for perceived current knowledge were conjoint analysis (mean = 1.62 ± 1.17), item response theory (mean = 1.60 ± 1.46), and methods for integrating medication adherence (mean = 1.64 ± 1.21). Various cost analysis topics and ability to present analyses rated the highest for perceived current knowledge. For example, the highest score for perceived current knowledge was calculated for understanding types of healthcare cost (mean = 3.72 ± 1.12) and cost-effectiveness analysis (mean = 3.65 ± 1.18). The largest knowledge gap was calculated for methods for integrating medication compliance and persistence in health economic evaluations (mean = 2.30 ± 1.48). The smallest knowledge gap was calculated for types of healthcare costs (mean = 1.01 ± 1.17).

### *HEOR Preferred Learning Style*

Most respondents (74% [n = 66]) preferred to receive educational materials related to HEOR topics through online learning and

**Table 2 – Knowledge assessment.**

| Knowledge area | Current knowledge score, mean ± SD | Desired knowledge score, mean ± SD | Gap* score, mean ± SD |
|---|---|---|---|
| *Understanding of …* | 1.64 ± 1.21 | 3.96 ± 1.35 | 2.30 ± 1.48 |
| Use of methods for integrating medication compliance and persistence in health economic evaluations | | | |
| Propensity scoring methods | 1.69 ± 1.25 | 3.85 ± 1.31 | 2.17 ± 1.33 |
| Modeling using discrete event simulation | 2.02 ± 1.35 | 4.13 ± 1.16 | 2.14 ± 1.37 |
| Multicriteria decision analysis | 2.34 ± 1.35 | 4.42 ± 1.00 | 2.11 ± 1.29 |
| Optimization methods in healthcare delivery | 2.06 ± 1.27 | 4.12 ± 1.13 | 2.07 ± 1.24 |
| Choice-based conjoint analysis (discrete choice experiments) | 1.62 ± 1.17 | 3.68 ± 1.38 | 2.07 ± 1.24 |
| Item response theory | 1.60 ± 1.46 | 3.55 ± 1.45 | 1.96 ± 1.43 |
| Ability to prepare for multinational clinical trials: translation and cultural adaptation of PRO measures | 1.75 ± 1.42 | 3.67 ± 1.59 | 1.94 ± 1.43 |
| Use of public survey data in health outcomes research | 2.58 ± 1.39 | 4.51 ± 0.90 | 1.94 ± 1.28 |
| Indirect treatment comparison and network meta-analysis studies | 2.20 ± 1.15 | 4.07 ± 1.15 | 1.88 ± 1.09 |
| Analysis and interpretation of PROs | 2.60 ± 1.19 | 4.34 ± 0.98 | 1.76 ± 1.26 |
| Principles and methods of modeling healthcare costs | 2.77 ± 1.22 | 4.48 ± 0.83 | 1.74 ± 1.11 |
| Markov modeling: concepts, assumptions, applications | 2.80 ± 1.35 | 4.30 ± 1.14 | 1.51 ± 1.48 |
| Budget impact analysis | 3.10 ± 1.53 | 4.51 ± 0.96 | 1.45 ± 1.38 |
| Health-related quality of life | 3.02 ± 1.25 | 4.43 ± 0.95 | 1.43 ± 1.20 |
| Systematic review and meta-analysis applications | 3.22 ± 1.15 | 4.58 ± 0.70 | 1.36 ± 1.04 |
| Ability to present and disseminate analyses of research studies | 3.48 ± 1.05 | 4.79 ± 0.58 | 1.29 ± 0.97 |
| Cost of illness, cost minimization, cost-effectiveness analysis, and cost-utility analysis | 3.65 ± 1.18 | 4.86 ± 0.41 | 1.24 ± 1.15 |
| Types of healthcare costs: direct, indirect, etc | 3.72 ± 1.12 | 4.79 ± 0.49 | 1.01 ± 1.17 |

PRO indicates patient-reported outcome.
* Gap (using individual response pairs) = Desired knowledge level − Current knowledge level.

**Table 3 – Preference for HEOR learning formats/structures.**

| Preferred formats/structures* (n = 89, 84% of total survey responses) | n | % |
|---|---|---|
| Online learning programs/continuing education | 66 | 74 |
| Online resources | 60 | 67 |
| Peer-reviewed literature reviews | 46 | 52 |
| Workshops/small-group learning sessions | 46 | 52 |
| Symposia/conferences | 41 | 46 |
| Live webinars | 40 | 45 |
| Mentorship/preceptorship program | 37 | 42 |
| Expert speaker tour | 26 | 29 |
| Newsletter | 15 | 17 |
| Other | 4 | 4 |

HEOR indicates health economics and outcomes research.
* Survey respondents could select more than 1 answer.

continuing education programs (See Table 3). In addition, 52% (n = 46) of respondents preferred to receive educational support in peer-reviewed literature and workshop sessions. The delivery of educational material through newsletters (17% [n = 15]) or expert speaker tours (29% [n = 26]) was not highly supported or preferred by this group of survey participants.

## Discussion

The responses collected in this study provide valuable information to understand HEOR perceived and desired knowledge from ISPOR members within Latin America. The information obtained from this survey can assist with HEOR topics that might be of interest to include in upcoming educational programs.

Higher chapter membership in Brazil accounted for a predominance in survey respondents from the country. Interestingly, Brazil accounts for the largest population of ISPOR members within Latin America. According to the ISPOR Brazil Chapter Annual Report, in 2016 there were 450 regional chapter members.[10]

Findings show the need for developing training and educational support in areas of HEOR that may not be common in pharmacy pharmacoeconomics curricula. In this survey, the largest knowledge gap was obtained for medication adherence and compliance among Latin American ISPOR members. Although these terms have been used together, medication adherence, or patients taking medications as prescribed by their healthcare provider,[11] was the intended topic of interest for this study. This suggests that the demand exists for providing continuing educational programs related to this topic in the professional setting. On the basis of responses captured by this survey, additional training and coursework might be necessary in academia to provide students with the necessary knowledge on prevalent topics for real-world evidence such as medication adherence.

Commonly, in the United States, pharmacoeconomics curricula include coursework and training in healthcare cost analysis and cost-effectiveness.[12] The results obtained from this study agree with the findings reported from 2 systematic review studies. The studies conducted by Thomas et al[13] and Rascati et al[14] evaluated the need for pharmacoeconomics education, educational trends, and methods for educational goals. In 2016, Thomas et al described the global trend of including pharmacoeconomics courses in undergraduate pharmacy education. Pharmacoeconomics was integrated into the US curricula during the early 2000s and Brazil introduced some courses, but it is not yet part of the curricula of most universities at the undergraduate level.[13,14] It is noteworthy that many countries worldwide struggled to adjust the educational structure to align with new regulations and policies as well as professional demands and application of a highly sought-after talent. Rascati et al[14] highlighted the standardization of pharmacoeconomics education through the formation of an ISPOR learning objectives task force in 2001. Therefore, the knowledge gaps for HEOR topics related to this field of study were low and suggest adequate educational support in the curricula in this area for Latin America.

Two other areas in which large knowledge gaps were found include propensity scoring methods and discrete event simulation. Although propensity scoring methods were defined in the early 1980s, their use in HEOR gradually increased after the early 2000s.[15] Similarly, the ISPOR reports on using discrete event simulation for modeling appear until 2012.[16,17] Thus, it is not surprising that these subject matters are not traditionally included in the didactic teaching of HEOR.

The iDLP offers individual training modules that can be accessed 24 hours a day. The goal of the program is to promote research and educational activities within healthcare outcomes and pharmacoeconomics. Many training modules on economic methods are available in several language options including English, Spanish, and Portuguese. Other training modules on topics related to patient-reported outcome methods, patient preference methods (discrete choice), and observational data methods (propensity score) are mostly offered in English. At the time of this study, the iDLP was developing training modules to address this gap. As ISPOR training tools continue to be put in place, HEOR professionals will be better equipped to apply pharmacoeconomics and outcomes research to make informed healthcare decisions.

The delivery of educational materials and information has evolved with advancements in technology and diversity in learning styles. Effective delivery and learning require a cohesive system of matching and balancing delivery of course content in a way that matches the student's learning style. Recently, delivery of educational programs through online training modules has been effective and desirable for students who are reflective learners.[18] On the basis of an individual's knowledge gap evaluation and learning style preference, online programs can offer solutions to strengthen and update an area of need. This is particularly valuable in professional continuing education as the evolution of HEOR programs advances. In addition, focused, small-group learning workshops are beneficial to facilitate discussion and application of topics taught among students at various skill levels. Face-to-face study groups are a common preference of active and visual learners.[18]

The findings of this study are subject to limitations. The response rate of the survey cannot be determined because the respondents may not have been current ISPOR members, but the respondents were considered having active membership status at a given time. Nonetheless, the potential for selection bias and limitations exists because these data may not reflect the opinions of all ISPOR members within Latin America. The survey captures the responses of student and professional members of ISPOR, collectively, suggesting that HEOR knowledge gaps can be applicable in both settings. The topics of interest may differ on the basis of professional experience level and expertise. The primary goal of this study was to survey ISPOR members uniformly, because the ISPOR iDLP does not separate student and professional educational modules and tools. Furthermore, the design of the survey did not request respondents to identify on the basis of professional or student status, and therefore our conclusions cannot differentiate areas of interest most applicable to a specific target audience. In addition, the network of HEOR professionals and educators is diverse and expanding. The selection for data

collected from this study was designed to evaluate ISPOR members. Other organizations were not assessed in this study and, hence, may have varying results.

## Conclusions

The knowledge gap assessment provides feedback on current knowledge gap perceptions among ISPOR members within Latin America. This evaluation is beneficial in obtaining information on perceived areas of educational confidence or weakness. Inclusion of HEOR topics and pharmacoeconomics in the pharmacy and other health professions curricula is "empowering pharmacists to contribute meaningfully to national health policy and healthcare delivery."[13] Unfortunately, it is difficult to standardize educational policy and learning objectives in HEOR education. Nevertheless, worldwide, the goal of education remains consistent. Knowledge provides the skills necessary to fulfill a role in society.[14]

## Supplemental Materials

Supplementary data associated with this article can be found in the online version at https://doi.org/10.1016/j.vhri.2018.10.006.

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