

Záró beszámoló

Kockázatok megítélésének szerepe az egészséggel összefüggő döntésekben, PD 112499

Vezető kutató: Baji Petra, PhD

Final project report

Post-doc project PD 112499: Association of perceived risk and health behavior

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SUMMARY, OUTCOMES

The aim of the post-doc research program was to study how risk perception of different health care actors (patients, physicians and policy makers) influence different health related decisions. The empirical studies are focused on the following fields:

- 1) How risk perception of patients correspond with objective calculated risks
- 2) How risk perception of patients influence willingness to pay for health care services
- 3) How risk perception of doctors influence the uptake of new technologies
- 4) How risk perception of policy makers influence reimbursement decisions

See the detailed summary of the studies below.

In addition to the empirical studies, a literature review was carried out on the effect of risk perception on health related behavior at the beginning of the project.

As a result, so far three papers have been accepted for publication in peer-reviewed international journals with total impact factor (total IF=4,465), three additional manuscripts were submitted to peer-reviewed scientific journals and currently under review and one manuscript was submitted to a conference. (See the reference list.)

Most of my research was carried out with co-authors from several universities all around the world. Thus, this post-doc research program allowed me to participate in international research collaborations and carry out a research activity which is recognized at an international level.

EMPIRICAL STUDIES

1. Topic 1: How risk perception of patients correspond with objective calculated risks: Comparison of subjective and objective mortality and morbidity risks of patients

Two studies were carried out to compare risk perception of patients with their actual estimated risks. One of them compared self-perceived 10-year fracture risks of women with osteoporosis with their estimated fracture risk. The other study explored subjective and objective survival probabilities and other health indicators before and after diagnosis of three dread diseases (cancer, hearth attack, infarction).

1.2 Comparing objective and subjective fracture risk of patients with osteoporosis

The main objectives were to explore associations between self-perceived 10-year fracture risks of women with osteoporosis (OP) and their actual risks calculated by the FRAX® algorithm and to identify determinants of the underestimation of risk. We used secondary data from a cross-sectional study carried out in 11 OP centres in Hungary (prior to this project) which collected data on the risk factors considered by the FRAX® calculator. In the survey patients also estimated their subjective 10-year probability of any major osteoporotic and hip fracture on a visual analogue scale (VAS) and numerically, in percentages. We applied logistic regression to analyze the determinants of the underestimation of fracture risk by at least 10%-points and explored associations between risk factors and subjective risk using linear probability models. Data for 972 OP patients were included in the analysis. Major OP and hip fracture risk measured by FRAX® was on average 20.1% and 10.5%, while subjective estimates were 30.0% and 24.7%, respectively. Correlations between actual and subjective measures were very weak ($r=0.12-0.16$). Underestimation of major OP fracture risk was associated with having had one previous fracture (OR=2.0), parental hip fracture (OR=3.4), femoral T-score \leq -2.5 (OR=4.2), higher age, body mass index and better general health state. We did not find significant associations between subjective risk estimates and most of the risk factors except for previous fractures. In conclusion, Hungarian OP patients fail to recognize most of the risk factors of fractures. Our findings may improve risk communication in OP care and help clinicians to identify patients who underestimate their fracture risk.

The study was carried out with my colleagues at the Department of Health Economics, Corvinus University of Budapest in co-operation of the Semmelweis University. The manuscript was submitted to a peer-reviewed international journal in September, 2016 and currently under review.

Petra Baji, László Gulácsi, Csaba Horváth, Valentin Brodzsky, Fanni Rencz, Márta: Comparing self-perceived and actual estimated fracture risk by FRAX® of women with osteoporosis (under review in Archives of Osteoporosis)

1.2. Comparison of subjective and objective survival probability after cancer, stroke and heart attack

In this study we analyzed the effect of an onset of a health shock on subjective survival probability and other self-reported measures and compared it to objective survival probability and hospitalization. In particular, we were interested whether expectations of people respond to health shocks and whether these follow the evolution of objective indicators over time. Using longitudinal data from the Health and Retirement Study, we estimate fixed effects models of adaptation and anticipation for the objective and subjective indicators. The results show that after cancer diagnosis, conditional on surviving, both the objective and subjective longevity and self-reported health measures drift back to the values before diagnosis. For stroke and heart attack, in spite of their persistent negative effect on mortality, subjective life expectations and self-reported health measures seem to indicate only a transient effect of the health shock. These differences between the objective and subjective measures are in line with the concept of hedonic adaptation.

The draft of the paper was submitted to a research conference in October, 2016.

Petra Baji, Anikó Bíró: Adaption or recovery after health shocks? Evidence using subjective and objective health measures (manuscript, submitted to the conference: Magyar Közgazdaságtudományi Egyesület 2016. évi konferenciája)

2. Topic 2: How risk perception of patients influence willingness to pay for health care services

In this study we examined whether willingness to pay for informal payments to doctors in maternity care and found that women in high risk categories are significantly more willing to pay informal payments to their doctor in maternity care.

Data is coming from an online cross-sectional survey to a nationally representative sample of Hungarian women (N=600). Items explored socio-demographic and prenatal and obstetric risk factors, characteristics of birth care, type of provider, obstetric interventions, and experiences of respectful care. Women reported whether they paid informally, and if so, how much. Prenatal and obstetric risk factors were grouped and analyzed according to three categories: significant, moderate and perceived. A bivariate probit model was used to estimate conditional probabilities of paying informally given that a woman visited prenatally with a chosen doctor. Marginal effects of the covariates were calculated. We developed a linear regression model

to explore the associations among the amount of informal payments, provider choice, and characteristics of care (obstetric risk factors (no/low, moderate/significant), intervention rates, respectful maternity care). Regarding risk categories, we found that that women in the highest obstetric/medical risk category were significantly more willing to pay: the probability of paying informally was higher if the woman reported a significant medical/obstetric risk factor (marginal effect: 8% points). This could reflect their perceived need for more attention from an obstetrician.

This study was carried out in a research collaboration with Nicholas Rubashkin (University of California at San Francisco, San Francisco, CA), Imre Szebik (Semmelweis University, Budapest, Hungary), Kathrin Stoll (The University of British Columbia, Canada), Saraswathi Vedam (The University of British Columbia, Canada). The manuscript was submitted to a peer-reviewed international journal in September 2016, and currently under review.

Petra Baji, Nicholas Rubashkin, Imre Szebik, Kathrin Stoll, Saraswathi Vedam: Informal cash payments for birth in Hungary: Associations with continuity providers, interventions and respectful maternity care (under review in Social Science and Medicine).

3. How risk perception of doctors influence take up of new technologies: Preferences of gastroenterologists for biosimilar treatments in inflammatory bowel diseases – trading between risks and benefits - Discrete choice experiment studies -

The objective of the study was to explore preferences of gastroenterologists for biosimilar drugs in inflammatory bowel diseases (IBD), namely in Crohn's Disease (CD) and in Ulcerative Colitis (UC) and to reveal trade-offs between the perceived risks and benefits related to biosimilar drugs, which has been recently available as a treatment option. Biosimilar drugs are substantially cheaper than the originator drugs, allowing cost-savings, which might be reinvested in service provision to provide better access to therapy. However, physicians are cautious, and have several concerns about using biosimilars in IBD due to the lack of evidence from randomized clinical trials. Thus, the use of biosimilars strongly depend on individual risk perception of clinicians. In the study, discrete choice experiment was carried out with 51 gastroenterologist to reveal trade-off between risks and benefits related to the use of biosimilars. We found that, most gastroenterologists have concerns about using biosimilars, however they are willing to trade between perceived risks and benefits of the intervention, namely they are willing to consider their use if they could reallocate the potential savings to provide better access to the patients.

The study was carried out with the co-operation of the Semmelweis University, where colleagues were participated in the development of the survey and the data collection. The first paper, focused on CD, was

accepted for publication in June, 2015 in Scandinavian Journal of Gastroenterology (IF=2,199). The open-access pre-submitted version of the manuscript is available in the repository of Corvinus Economic Working Papers. The second part of the study, presenting results for UC, was accepted for publication in Value in Health Regional Issues.

Baji P, Gulácsi L, Lovász BD, Golovics PA, Brodszky V, Péntek M, Rencz F, Lakatos PL. Treatment preferences of originator versus biosimilar drugs in Crohn's disease; discrete choice experiment among gastroenterologists. Scand J Gastroenterol. 2016 Jan;51(1):22-7. doi: 10.3109/00365521.2015.1054422. Epub 2015 Jun 10.

Full text available in Corvinus Economics Working Papers repository: CEWP 17/2015

http://unipub.lib.uni-corvinus.hu/2080/1/CEWP_201517.pdf

Baji P, Gulácsi L, Golovics PA, Lovász BD, Brodszky V, Péntek M, Rencz F, Lakatos PL. Perceived risks contra benefits of using biosimilar drugs in ulcerative colitis; discrete choice experiment among gastroenterologists. Value in Health Regional Issues, Online first: 5 October 2016, <http://dx.doi.org/10.1016/j.vhri.2016.07.004>

4. Topic 4: The effect of risk perception dimensions on the rank of different health care services in priority setting and willingness to pay of policy makers for health care intervention.

Due to the scarce of resources, prioritizing health services which can be covered by the social health insurance is crucial. Coverage decisions are often based on cost-effectiveness of the interventions, and rarely quantify the importance of other factors, related to the disease (for example – severity, and the prevalence of the disease- both important risk perception dimensions). The aim of the study was to explore how these factors, besides cost-effectiveness influence preferences of policy makers and their willingness to subsidize different health interventions. Discrete choice experiment was used to explore policy makers' preferences. In the study, we found that risk perception dimensions (number of potential beneficiaries, and the severity of disease) are as important factors in decision making as attributes related to health care intervention itself (e.g. cost-effectiveness or the individual benefit of the treatment...).

This study was based on secondary data analysis. Data was collected prior to this post-doc research project in a larger non-sponsored study by a network of health economists (co-authors of the paper) in different countries and results for individual countries have been published before. The same dataset was used in this

project to make cross-country comparison. The paper was accepted for publication in the European Journal of Health Economics (IF=2,266) in August, 2015.

Baji P, García-Goñi M, Gulácsi L, Mentzakis E, Paolucci F. Comparative analysis of decision maker preferences for equity/efficiency attributes in reimbursement decisions in three European countries. Eur J Health Econ. 2016 Sep;17(7):791-9.

Full text available in Murdoch Research Repository:

http://researchrepository.murdoch.edu.au/28522/1/Comparative_analysis_of_decision_maker_preferences.pdf

LITERATURE REVIEW

Literature review of the health economic literature - The effect of risk perception on health related behavior

The objective of the study was to review health economic literature related to risk perception. First, theoretical models on health related decisions are briefly summarized. After, the paper presents the most relevant findings of empirical studies which analyzed the effect of risk perception on health related decisions. The paper is focuses on two main areas: healthy behavior (the association between risk perception and smoking related decisions) and decisions about the utilization of health care services (the association between risk perception and decisions about vaccination and tertiary prevention). The review paper was submitted to Közgazdasági Szemle.

Baji Petra: A kockázatok megítélésének szerepe az egészséggel kapcsolatos döntésekben (under review in Közgazdasági Szemle)

LIST OF PUBLICATIONS:

1. *Baji P, Gulácsi L, Lovász BD, Golovics PA, Brodszky V, Péntek M, Rencz F, Lakatos PL. Treatment preferences of originator versus biosimilar drugs in Crohn's disease; discrete choice experiment among gastroenterologists. Scand J Gastroenterol. 2016 Jan;51(1):22-7. doi: 10.3109/00365521.2015.1054422. Epub 2015 Jun 10.*

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2. *Baji P, García-Goñi M, Gulácsi L, Mentzakis E, Paolucci F. Comparative analysis of decision maker preferences for equity/efficiency attributes in reimbursement decisions in three European countries. Eur J Health Econ. 2016 Sep;17(7):791-9.*
Full text available in Murdoch Research Repository:
http://researchrepository.murdoch.edu.au/28522/1/Comparative_analysis_of_decision_maker_preferences.pdf
3. *Baji P, Gulácsi L, Golovics PA, Lovász BD, Brodszky V, Péntek M, Rencz F, Lakatos PL. Perceived risks contra benefits of using biosimilar drugs in ulcerative colitis; discrete choice experiment among gastroenterologists. Value in Health Regional Issues, Online first: 5 October 2016, <http://dx.doi.org/10.1016/j.vhri.2016.07.004>*
4. *Petra Baji, Nicholas Rubashkin, Imre Szebik, Kathrin Stoll, Saraswathi Vedam: Informal cash payments for birth in Hungary: Associations with continuity providers, interventions and respectful maternity care (under review in Social Science and Medicine).*
5. *Petra Baji, László Gulácsi, Csaba Horváth, Valentin Brodszky, Fanni Rencz, Márta Péntek: Comparing self-perceived and actual estimated fracture risk by FRAX® of women with osteoporosis (under review in Archives of Osteoporosis)*
6. *Petra Baji, Anikó Bíró: Adaption or recovery after health shocks? Evidence using subjective and objective health measures (manuscript, submitted to a conference in October, 2016)*
7. *Baji Petra: A kockázatok megítélésének szerepe az egészséggel kapcsolatos döntésekben (under review in Közgazdasági Szemle)*