more computationally efficient programming languages (such as C) are preferred; concerns regarding model transparency using compiled languages are best addressed via thorough documentation and model testing.

CONCEPTUAL PAPERS & RESEARCH ON METHODS—Patient-Reported Outcomes Studies

**PMC22**

THE IMPACT OF COMORBIDITY BURDEN AND AGE ON PREFERENCE-BASED HRQL IN THE UNITED STATES

Sullivan PW1, Ghushchyan VH2

University of Colorado Denver; Aurora, CO, USA

OBJECTIVES: Gains in life expectancy have lead to aging populations with more chronic comorbidity. This study aims to examine the impact of age and comorbidity on EQ-5D index scores in a nationally representative sample of the U.S.

METHODS: The pooled 2001 and 2003 Medical Expenditure Panel Survey (MEPS) was used. MEPS is a nationally representative survey of the U.S. civilian, noninstitutionalized population based on self-report which collects detailed information on sociodemographic characteristics, medical conditions and HRQL. The total number of chronic conditions for each individual was calculated based on ICD-9 codes. Spline regression was used to allow for nonlinear age effects: individuals were separated into 4 quartiles based on age: 18–31; 32–44; 45–58; and >58 years. Censored least absolute deviations (CLAD), Tobit and OLS methods were used to regress EQ-5D index scores on age and chronic comorbidity, controlling for income, gender, race, ethnicity, education, physical activity and smoking status. Interactions between age and chronic conditions were also explored.

RESULTS: After controlling for chronic comorbidities and other confounders, age was not statistically significant except for those >58 years and the magnitude of this coefficient was very small (coefficient age >58 years = -0.0006). However, the coefficients for chronic comorbidities were highly statistically significant with large magnitudes for those with ≥2 chronic conditions (coefficient 2 chronic conditions = -0.16; coefficient 9 chronic conditions = -0.28). Having only one chronic condition was not statistically significant. The interaction between age and chronic comorbidity was significant, but the deleterious impact of their interaction was largely dominated by the existence and number of chronic conditions. CONCLUSIONS: Chronic conditions have a significant deleterious impact on EQ-5D index scores regardless of age. The negative impact of age on EQ-5D index scores may be due to the existence and degree of chronic comorbidity.

**PMC23**

WHAT IS POLITICIAN’S AND CLINICIAN’S WILLINGNESS TO PAY (WTP) FOR FUTURE HEALTH BENEFIT BASED ON 15D, EQ-5D AND LIFE-YEARS? A CONTINGENT VALUATION (CV) AMONG 8 DISEASES WITH THE TOTAL OF 1092 CASES

Soini E1, Kukkonen J2, Myllykangas M3, Ryymanen OP4

1ESiOR Oy, Department of Health Policy and Management, and Department of Social Pharmacy, University of Kuopio, Kuopio, Finland, 2Kuntohovi Spa, Joensuu, Finland, 3University of Kuopio, Kuopio, Finland, 4University of Kuopio and Kuopio University Hospital, Kuopio, Finland

OBJECTIVES: To estimate WTP (€, 2006 value) per incremental quality-adjusted life-year (QALY) gained for a future health technology when compared to the current technology in the treatment of a particular disease. Secondly, WTP for incremental life-year gained (LYG), and WTP for average QALY and LY were estimated. METHODS: For the first time in the Finnish setting, CV was used to establish WTP for health benefits that do not have market prices. A postal survey including 8 diseases (1092 cases in total) with dichotomous choice (DC) type questions was carried out to clinicians (N 197) and political decision makers (N 225). Based on the answers with varying costs for health benefit, aggregate demand functions (ADF) were drawn and the mean WTP for particular benefit in particular disease was estimated as the area under ADF. As a new innovation, the potential future order of disease priority in terms of WTP was established by estimating cumulative marginal changes (CMC) in ADF. The care costs and utilities were obtained from recent Finnish literature. Discounting with 5% and 0% was done due to the life-time perspectives. RESULTS: The mean WTP per incremental QALY gained with 15D/ED-5D utilities were the following (CMCs are in the parentheses): neurological disturbance €420,921/€46,804 (€147,653/€164,168), metabolic disturbance €320,974/€333,961 (€18,823/€123,631), cancer €127,937/€138,308 (€61,611/€66,604), dementia €100,536/€107,731 (€40,830/€43,731), paraplegia €124,544/€163,41 (€35,013/€15,839), coronary heart disease €48,381/€50,928 (€15,191/€15,989), type 1 diabetes €107,114/€548,63 (€19,989/€10,238), and narcomanic €30,859/€45,106 (€7,705/€14,231). WTPs for incremental LYG, average QALY and LY were lower. The difference between EQ-5D and 15D WTP exceeded 10% in paraplegia, diabetes, narcomaniacs, and neurological disease. This demonstrated that the results obtained using different utility tools differ even in the ADF-setting. CONCLUSIONS: Depending on the disease and utility tool, CV based on DCs seems to result to different ADFs and WTPs. By estimating CMCs from ADFs, potential future order for diseases is estimated.

**PMC24**

SELF-ASSESSED HEALTH STATUS IN POLAND: EQ-5D FINDINGS FROM POLISH VALUATION STUDY

Golicki D1, Niewada M2, Jakubczyk M1, Wrona W1, Dwojak A3, Gasiewska A1, Holownia M1, Kołtowski L1, Macioch T1, Hermanowski T1

1Department of Pharmacoconomics, Medical University of Warsaw, Warsaw, Poland, 2Department of Experimental and Clinical Pharmacology, Medical University of Warsaw, Warsaw, Poland, 3Medical University of Warsaw, Warsaw, Poland

No population norms for any generic health related quality of life questionnaire are currently available in Poland. OBJECTIVES: To measure the health of a representative sample of the general population of Poland by using EuroQol questionnaire. METHODS: Visitors of patients in seven medical centers in Warsaw, Skierniewice and Pulawy, aged 18 and over, were interviewed during Polish EQ-5D valuation study. Stratified quota sampling was used. Respondents completed EQ-5D questionnaire and provided information on age, sex, marital state, education, employment, income, housing tenure, medical history and smoking behaviour. The interviews took place since February till May 2008. RESULTS: The final sample comprising 317 subjects (62% Warsaw residents) was representative of the general population with respect to age and sex. A moderate problem on at least one dimension was reported by 57% respondents, whereas only 4.7% of respondents reported any extreme problem. Forty percent of respondents reported any problems with pain or discomfort, 38% with anxiety or depression, 16% with mobility, 13% with usual activities and 3% with self care. The mean state of health recorded on the visual analogue scale was 81.6 (SD 14.4). The mean VAS value decreased from about 87 and 91 in the youngest age group to 67 and 72 in the oldest age group, in men and women respectively. CONCLUSIONS: Pain and anxiety are commonly reported in Polish society.
EQ-5D can be a valuable tool for studies on health outcomes and health inequalities in Polish population.

**IS THE EQ-5D QUESTIONNAIRE A PREDICTOR OF MORTALITY AND HOSPITALIZATION IN A GENERIC ELDERLY POPULATION?**

**Paceli B1, Broccoli S2, Puccini A1, Cavrini G1**
1Health Authority of Bologna, Bologna, Italy; 2University of Bologna, Bologna, Italy

**OBJECTIVES:** This study is aimed to evaluate the prognostic ability of EQ-5D questionnaire for hospitalization and mortality in an elderly Italian population. Although many studies show that Health-Related Quality of Life is a significant predictor of survival and morbidity, even after controlling for socio-demographic covariates and physical health status, to date there are few studies that prove the efficacy of EQ-5D questionnaire to predict mortality and hospitalization on general population.

**METHODS:** A retrospective cohort study on 5256 subjects aged 65 years or more, recruited in 2003 in Italy. EQ-5D Index and VAS, socio-demographics variables and some medical covariates (collected with a postal questionnaire) were used to predict hospitalization and mortality. Mortality and hospitalization data during the 12-months period after the completion of the questionnaire were obtained by record linkage with administrative mortality and discharge datasets. Hospitalization was defined as any hospital admission for natural causes (ICD-9 CM diagnosis codes: 0–799) that included at least one overnight stay in the hospital. Kaplan-Meier’s method in univariate analysis and Cox proportional hazards model with robust variance estimator to calculate the relative risks of mortality and first hospitalization were used.

**RESULTS:** The EQ-5D questionnaire is a significant predictor of mortality. The curves estimated with Kaplan-Meier’s method show significant differences in survival time at one year (Log rank test, p-value < 0.05) among individuals reporting different health status. The Cox proportional hazard model performed controlling for sex, age, BMI, physical activity and functional activity shows increasing risk for people perceiving worse health status. Hospitalization results are not yet available as the record linkage procedure between survey and discharge data is in progress.

**CONCLUSIONS:** Evaluation of EQ-5D instrument as a mortality and morbidity predictor will make it a proxy variable of prognostic mortality score systems, including various laboratory parameters, seldom available in surveys not specifically designed for epidemiological study.

**PREDICTING HEALTH SERVICE UTILIZATION WITH THE PCS AND MCS OF THE SF-36**

**Chen T1, Li L2**
1Zhejiang University, Hangzhou, China; 2Zhejiang University, Hangzhou, Zhejiang, China

**OBJECTIVES:** We aim to predict outpatient consultation and inpatient consultation with two summary scores of the SF-36, physical component summary (PCS) and mental component summary (MCS). **METHODS:** A retrospective cross-sectional design was carried out among primary care patients in mainland China. Health-related quality of life (HRQOL) was measured by two summary score of the SF-36, PCS and MCS. Either the electronic or the paper version of validated Chinese SF-36 was used in the survey. Outpatient consultation was calculated by the monthly outpatient consultation rate and inpatient consultation was calculated by the annual hospitalization rate. Binary logistic regression for consultation and inpatient consultation was adopted in the analyses. A total of 733 valid subjects were eventually recruited in this study.

**RESULTS:** For the monthly outpatient consultation rate, the odds ratios (OR) and 95% confidence interval (CI) were 0.919 (0.891, 0.947) for PCS and 0.995 (0.970, 1.021) for MCS. For the annual hospitalization rate, OR and 95% CI were 0.907(0.884, 0.930) for PCS and 0.951 (0.927, 0.975) for MCS.

**CONCLUSIONS:** PCS of the SF-36 can predict both outpatient consultation and inpatient consultation, whereas MCS of the SF-36 can predict inpatient consultation among primary care patients in mainland China.

**DO LIKERT-TYPE SCALE AND VISUAL ANALOGUE SCALE MEASURE THE SAME QUALITY OF LIFE?**

**Hisao Y1, Yao G2**
1National Taiwan University, Taipei, Taiwan; 2National Taiwan University, Taipei, Taiwan

**OBJECTIVES:** Likert-Type Scale and Visual Analogue Scale (VAS) are two common psychometric methodologies for measuring Quality of Life (QOL). However, these two scales are different from their constructions and rating methods. Besides, whether these different attributes will result in different psychometric properties for Likert-Type Scale and VAS on measuring QOL has not yet been examined. Thus in the present study, we compared Likert-Type Scale and VAS for measuring QOL in three aspects: 1) the degree of agreement between these two scales; 2) the evaluation of the Measurement Equivalence/Invariance (ME/I) over these two scales for the assessment of QOL; and 3) the investigation of construct validity of theoretical framework of QOL across these two scales.

**METHODS:** A total of 496 adult subjects were used in the current study (58.9% female, n = 292; 40.2% male, n = 200; mean age = 24.64 yrs). Each subject was asked to fill in the WHOQOL-BREF in two different visions, one was measured by Likert-type scale and the other was by VAS. Reliability analyses were applied by using Cronbach’s alpha coefficient and split-half coefficient. Besides, agreement analyses were applied by using Pearson’s r, Intraclass Correlation Coefficient (ICC), Lin’s Concordance Correlation Coefficient (CCC), and Bland-Altman Plot. Finally, a MTMM matrix and Confirmatory Factor Analysis (CFA) were used for examining the validity and ME/I across Likert-type Scale and VAS.

**RESULTS:** The result indicated that both Likert-Type Scale and VAS were easy for subjects to answer, and possessed adequate reliability although reliability for VAS measures were consistently higher than Likert-Type measures. The agreements between these two scales were high, indicating adequate reproducibility of test scores across scales. In ME/I analyses, the result showed that VAS measures and Likert-Type measures did not reflect the same structure, furthermore, the VAS defined a better construct of QOL.

**CONCLUSIONS:** VAS seemed to have better psychometric properties for measuring QOL over Likert-Type Scale. More discussion on the two measurement scales will be provided in our presentation.

**STATUS-QUO BIAS IN STATED-CHOICE STUDIES: IS IT REAL?**

**Mohamed AF1, Hauber AB1, Johnson FR1, Meddis D2, Wagner S2**
1RTI Health Solutions, Research Triangle Park, NC, USA; 2AstraZeneca, Wilmington, DE, USA

**OBJECTIVES:** Change is not costless. Thus, we conducted an experiment to determine if status-quo bias—bias toward current medication even when better alternatives are offered—exists in a stated-choice study among asthma patients who take...