VALUE IN HEALTH ▮ (2016) ▮▮▮–▮▮▮

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/jval

Update to the Report of Nationally Representative Values for the Noninstitutionalized US Adult Population for Five Health-Related Quality-of-Life Scores

Janel Hanmer, MD, PhD[1,*], *Robert M. Kaplan, PhD*[2]

[1]*Division of General Internal Medicine, University of Pittsburgh Medical Center, Pittsburgh, PA, USA;* [2]*UCLA Department of Health Services, University of California, Los Angeles, CA, USA*

ABSTRACT

Background: The most recent reports of nationally representative health-related quality-of-life (HRQOL) values for the United States used data that were collected over a decade ago. **Objectives:** To update these values using data from 2011, stratified by age and sex. **Methods:** This study used data from two sources—the 2011 Medical Expenditures Panel Survey (MEPS) and the 2011 National Health Interview Survey (NHIS). Both are nationally representative surveys of the US noninstitutionalized civilian population. The MEPS was used to calculate four HRQOL scores: categorical self-rated health, mental and physical component summaries from the short form-12 items (SF-12) health survey, and the health state short form-6 dimensions (SF-6D). We also estimated Quality of Well-Being Scale scores from the NHIS. We reported means and quartiles for all continuous scores, stratified by decade of age and sex. **Results:** There were 23,906 eligible subjects in the 2011 MEPS and 32,242 eligible subjects in the 2011 NHIS. All age and sex categories had instrument completion rates above 84%. Females reported lower mean scores than did males across all ages and instruments. In general, those in older age groups reported lower scores than did those in younger age groups, with the exception of the mental component summary scores from the SF-12 health survey. When compared with previous reports, these new values were generally lower than those in previous reports but rarely reached minimally important difference criteria. **Conclusions:** This report updates US nationally representative age- and sex-stratified estimates for five HRQOL scores using data from 2011. These values are important for use in both generalized comparisons of health status and in cost-effectiveness analyses.

Keywords: health status, quality of life, surveys and questionnaires, United States.

Introduction

Standardized health-related quality-of-life (HRQOL) measures are used to describe health status and measure health changes over time in both individuals and groups. Standardization ensures comparability across different studies, and generic HRQOL measures are important for comparisons across different diseases and health conditions. Generic HRQOL measures with algorithms that yield utility scores are appropriate for constructing quality-adjusted life-years to inform decision making, as well as for cost-effectiveness analyses [1]. Several reports by the Institute of Medicine have called for the use of standardized measures of population health to track the wellness of the populations over time [2]. Nevertheless, we still do not have a standardized population health metric for the US population.

Some generic HRQOL measures have been included in US nationally representative data sets [3]. As a step toward quantifying US population health, we previously published a catalog of values representative of the US noninstitutionalized civilian population using data collected in 2001 in the Medical Expenditures Panel Survey (MEPS) and the National Health Interview Survey (NHIS) [3–5]. The data collected in 2011 were recently released, and so we report 10-year updates for five of the HRQOL measures included in the previous catalog: categorical self-rated health, mental and physical component summaries from the short form-12 items (SF-12) [6], an estimated Quality of Well-Being (QWB) score [7], and the short form-six dimensions (SF-6D) [8].

Methods

Subjects

This study used data from two sources—the 2011 MEPS and the 2011 NHIS. Both are nationally representative surveys of the US

Conflicts of interest: The authors have indicated that they have no conflicts of interest with regard to the content of this article.

* *Address correspondence to:* Janel Hanmer, Division of General Internal Medicine, University of Pittsburgh Medical Center, 230 McKee Place, Suite 600, Pittsburgh, PA 15213.

E-mail: hanmerjz@upmc.edu.

1098-3015$36.00 – see front matter

http://dx.doi.org/10.1016/j.jval.2016.05.019

noninstitutionalized civilian population. The NHIS is an interviewer-administered, cross-sectional household survey, which gathers information on all household members, with detailed information about one adult and one child per household. The detailed information includes the health status information used in this analysis. The NHIS sampling and interviewing are continuous throughout each year (see http://www.cdc.gov/nchs/nhis.htm).

The sampling frame of the Household Component of the MEPS is drawn from respondents to the NHIS. The MEPS Household Component collects data from a nationally representative sample of households through an overlapping panel design. The 2 years of data for each panel are collected in five rounds of interviews. This provides continuous and current estimates of health care expenditures at both the person level and the household level for two panels for each calendar year. In 2011, the self-administered questionnaire given to all adults aged 18 years or older in the MEPS included the SF-12 v2™ and categorical self-rated health [9].

Measures

Mental component summary and physical component summary—self-administered

Data were obtained using the Medical Outcomes Study SF-12 v2 [6]. The 12 multiple-choice items of the SF-12 relate to eight health dimensions: physical functioning, physical role limitations, emotional role limitations, pain, general health, vitality, social functioning, and mental health. The mental component summary (MCS) and the physical component summary (PCS) were developed by reducing the eight dimensions to two dimensions using factor analysis. The factor scores were normalized so that both the MCS and the PCS had averages of 50 and SDs of 10, with respect to the proprietary US national data set held by QualityMetric, Inc. (Lincoln, RI) [10]. We included in the MEPS data set the imputed scores that were calculated using a proprietary algorithm of QualityMetric, Inc.

The SF-12 also includes the categorical self-rated health item "In general, would you say your health is: Excellent, Very Good, Good, Fair, or Poor?"

QWB Scale (estimated)—interviewer-administered

The QWB Scale categorizes a respondent with respect to mobility, physical activity, social activity, and symptom/problem. Preference weights for each function level were derived from 867 raters, and a scoring algorithm was developed to yield scores between 0 and 1 [11]. A QWB estimation (QWB Extended 1 [QWBx1]) procedure has been developed from NHIS data recorded from 1979 to 1996 [7]. NHIS data since 1997 contained questions on functional limitations that more closely matched with the QWB social activity and physical activity subscales and the estimate algorithm was modified to reflect these changes. The modified algorithm can be accessed at http://www.pitt.edu/~jzh23/.

SF-6D—self-administered

The SF-6D scoring algorithm uses seven questions from the SF-12. These questions were used to construct health scenarios that were evaluated using the standard gamble technique in a representative sample of the UK population [8]. Regression analysis was then used to model the preferences assigned to each health state. A utility-based score can be assigned to each health state using the resulting scoring algorithm with scores between 0 and 1.

Analyses

Data were analyzed using SAS 9.3 (SAS, Cary, NC) to allow adjustment for the complex sampling design of the MEPS and the NHIS. The reported results incorporate the sampling and poststratification weights, yielding nationally representative estimates for noninstitutionalized adults.

For categorical self-rated health, we report the full distribution of responses. For each continuous scale, we report the estimated mean value, 95% confidence interval around the mean estimate, and quartile-point estimates. All analyses were stratified by sex and decade of age.

Results

There were 23,906 eligible subjects in the 2011 MEPS and 32,242 eligible subjects in the 2011 NHIS. Table 1 in Supplemental Materials found at http://dx.doi.org/10.1016/j.jval.2016.05.019 presents the number of respondents in each sample for each HRQOL measure stratified by age and sex. In general, instrument completion rates were very high, and all completion rates were above 84%. Imputation of the QWBx1 was completed for all respondents in the NHIS.

Table 2 in Supplemental Materials found at http://dx.doi.org/10.1016/j.jval.2016.05.019 presents the full distribution of categorical self-rated health responses stratified by age and sex. Females were less likely than males to report "excellent" self-rated health in all age groups. As age increased, the proportion of those who reported "excellent" and "very good" health decreased, whereas the proportion of those who reported "fair" and "poor" health increased in both females and males.

When comparing the categorical self-rated health results with results from the 2001 data, there was an increase in "excellent" health responses from 20- to 29-year-old women and men. Results from those aged 30 to 39, 40 to 49, and 50 to 59 years were similar to the results from 2001, although there was a small but consistent decrease in the proportion of men who reported "excellent" or "very good" health in these age groups. There was an increase in "excellent" and "very good" health responses in women and men aged 60 to 69, 70 to 79, and 80 to 89 years. For example, the proportion of 60- to 69-year-old women who reported "excellent" health was 9.0% in 2001 and 11.2% in 2011.

Results from the continuous HRQOL measures illustrate age- and sex-stratified mean scores (Table 1, Fig. 1; see also Table 3 in Supplemental Materials found at http://dx.doi.org/10.1016/j.jval.2016.05.019). All scores are lower for women than for men. Older age groups reported lower PCS, SF-6D, and QWBx1 scores but higher MCS scores.

When comparing the 2001 results with those of 2011, it was found that mean scores for the QWBx1 were lower in 2011 than in 2001 in all age groups under age 70 years and slightly higher in the oldest age group, although none reached a minimally important difference (MID) of 0.03 [12]. Mean scores for the SF-6D were lower in all age- and sex-stratified groups, with an MID of 0.03 [13] reached in women aged 30 to 39, 40 to 49, and 50 to 59 years and men aged 50 to 59 years. There were small differences in mean MCS and PCS scores, although none reached an MID of 5.0 [10]. Comparing results from 2001 with those from 2011 for SF-12–derived scores is somewhat problematic because 2001 used the SF-12 v1 whereas 2011 used the SF-12 v2. The first use of SF-12 v2 in MEPS was in 2003. When comparing 2003 results with 2011 results, neither MCS nor PCS scores showed changes that reached MID.

Discussion

This report updates US nationally representative age- and sex-stratified estimates for five HRQOL scores using data from 2011. Consistent with previous reports, females generally reported