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Appraisal of quality of life by medical students: Preferences for themselves and for the elderly

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ABSTRACT

Appraisal of quality of life has become a mainstream instrument among life sciences. Little is known about what medical students regard as being important to foster a good quality of life in young and old age. Participants were second year medical students recruited prior to a mandatory lecture on aging. An analytic hierarchy process (AHP) was performed and participants were asked for pairwise comparison of criteria regarded as being important for quality of life for younger (Y-rating) and older (O-rating) persons. Preference choices comprised all health-related domains included in the Euroqol (EQ-5D + c; mobility, self-care, usual activities, pain/discomfort, anxiety/depression, cognition). In addition, three general domains unrelated to health were included (social relations, religion/personal beliefs, finances). From a total of 301 participants 269 (89.4%) datasets were completed and returned for analysis. Y-rating was sex-dependent for social relations and O-rating for self-care, depression/anxiety, cognition, and social relations. Y-rating vs. O-rating differed for self-care, usual activities, pain, depression/anxiety, cognition, and social relations. Cluster analysis with cluster variables social relations, religion/personal beliefs, and finances revealed four clusters for judgment of quality of life for both, Y-rating and O-rating, with clusters focusing on each one of the cluster variables and a fourth cluster on health-related QoL. We conclude that preferences for quality of life assessment are sex-dependent and different when subjects rate their own QoL and that of the elderly. While for some QoL appraisal is dominated by health-related quality of life, others consider social relations, religion/personal beliefs, or finances as more important.

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1. Introduction

The Constitution of the World Health Organization (WHO) defines health as "A state of complete physical, mental, and social well-being not merely the absence of disease…". From this definition it is concluded that measurement of health and the effects of health care must not only include measures of change in the frequency and severity of symptoms but also an estimation of well-being by measuring the improvement in quality of life (QoL). In a broader sense, QoL comprises both, domains relating to life in general such as social relations and finances, and health-related aspects such as pain and depression/anxiety. Several scales such as the Euroqol (Coons, Rao, Keininger, & Hays, 2000; Nemeth, 2006; Rabin & de Charro, 2001) or the WHOQOL (Anderson, Aaronson, Bullinger, & McBee, 1996) have been brought forward to assess the quality of life.

Health-related QoL is expected to convey greater meaning and more direct relevance across a wide spectrum of diseases and illnesses than clinical scales or instruments. QoL-instruments aim at achieving comparative judgments on the burden of diseases across the broad array of diseases in all specialties. These instruments have come to influence medical practice and research. Moreover, they are used in health economics and policy making and hereby influence resource allocation. Hence, it is important to understand how medical students appraise their own QoL and to further understand what they think about which domains dominate the QoL in the elderly.

Multi-criteria decision analysis is used to characterize and understand decision processes under the influence of multiple criteria. This technique has been applied to several health care issues to determine preferences for diagnosis and treatment (Adunlin, Diaby, Montero, & Xiao, 2015; Danner et al., 2011; Hummel et al., 2012; Riepe, 2015). One approach to establish a hierarchy of preferences in situations where several criteria contribute to an overall judgment is to perform an analytic hierarchy process (AHP). This method has been developed and brought increasingly into practice ever since the work of Saaty

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(1980) some 30 years ago. At the very heart of this method are comparison matrices resulting from pairwise comparisons of alternatives. With n alternatives, $(n^2 - n)/2$ choices have to be performed. For practical reasons, this limits the number of choices that can be targeted in a single study. It has been shown previously that pre-selection of alternatives may influence the result of the AHP (Ijzerman, van Til, & Bridges, 2012). Thus, it is straightforward to use established criteria if available to perform an AHP on the relative importance of these criteria.

It was the goal of the present study to gain insight what determines the quality of life of medical students, which domains of a standard health-related QoL-scale, the Euroqol, are regarded as most important and how the importance is rated in comparison to more general domains such as social relations and finances. A second goal was to analyze whether judgment on QoL is different when medical students are asked which domains are the most important for the QoL of the elderly.

2. Methods

The study was performed according to institutional guidelines and the principles outlined in the Declaration of Helsinki.

2.1. Participants

Medical student education in Germany comprises a lecture course on age-related phenomena in the second year of medical education. A total of 301 students took the course in 2014. About half of the students ($n = 154$, of which 138 returned the data sheet) were asked by what factors their own QoL is determined. The second half ($n = 147$, of which 131 returned the data sheet) was asked by what factors the QoL of the elderly is determined.

2.2. Instruments

2.2.1. Euroqol (EQ-5D (Rabin & de Charro, 2001))

The EQ-5D questionnaire is a generic instrument to measure health related QoL in five domains: mobility, self-care, usual activities, pain/discomfort and anxiety/depression. In recent years this instrument has been complemented by cognition to account for one of the important health-related domains for the elderly (EQ-5D + c) (Hulme, Long, Kneafsey, & Reid, 2004; Wolfs et al., 2007). There are two core components of the Euroqol: a description of the respondents own health in the above mentioned domains (rated on a three point Likert scale each) and a rating of the overall own health on a visual analog scale (VAS, score 0–100). For the present study the VAS was not analyzed.

2.3. AHP criteria and analysis

Analytic hierarchy process is a multiple criteria decision-making method that was developed some 30 years ago (Saaty, 1980). It is used in multiple settings to determine preferences among a set of alternative choices. The method rests on preference ratings using pairwise comparisons. For this study it was the goal to study preferences for general and health-related QoL. Answers

were to be given on a nine step scale of preferences with higher numerical values indicating higher relevance of the item. In small groups formal criteria of consistency of the responses need to be considered for analysis. For the analysis of the large group of subjects in the present study it was the goal to comprise all responses from the whole group rather than to restrict analysis. These criteria comprised all domains included in the EQ-5D + c (mobility, self-care, usual activities, pain/discomfort, anxiety/depression, cognition). In addition, three further domains were included (social relations, religion/personal beliefs, finances). A sample item is given in Fig. 1. In total, 36 choices had to be made.

For each participant the individual judgments were used to calculate the comparison matrices in a spreadsheet file. Preference weights were calculated provided by Saaty (1980). With this method all pairwise choices are integrated to calculate the overall preference (Fig. 2).

2.4. Statistics

To evaluate overall group differences, a one-way ANOVA was calculated with post-hoc Tukey-test for difference between alternatives (SPSS V. 17.0, SPSS, Chicago, Illinois).

3. Results

3.1. Self-appraisal of quality of life

A total of 138 datasets were analyzed (missing data in another 16 datasets not included in the analysis). The group comprised 48 males (age 22.3 ± 2.5 years (mean $\pm$ SD)) and 90 females (age 21.2 ± 2.2 years) ($p = 0.012$).

Weight for finances was strongly correlated with age ($r = 0.270$, $p = 0.001$). All other variables did not correlate with age. Of these other variables, a sex-difference was observed for social relations ($p = 0.008$) (Fig. 1).

3.2. Substituted appraisal of quality of life in the elderly

A total of 131 were analyzed (missing data in another 16 datasets not included in the analysis). The group comprised 55 males (age 21.7 ± 2.4 years (mean $\pm$ SD)) and 76 females (age 21.4 ± 2.6 years) (n.s.).

A sex difference was observed for self-care ($p = 0.021$), depression/anxiety ($p = 0.009$), cognition ($p = 0.003$), and social relations ($p = 0.025$) (Fig. 1).

3.3. Multivariate analysis of self vs. substituted appraisal and sex difference

Multivariate analysis shows that age modulates the appraisal of finances $F_{df=1} = 4.133$, $p = 0.043$. Self-appraisal vs. substituted appraisal shows differences for self-care ($F_{df=1} = 9.556$, $p = 0.002$), usual activities ($F_{df=1} = 26.318$, $p < 0.001$), pain ($F_{df=1} = 15.185$, $p < 0.001$), depression/anxiety ($F_{df=1} = 10.641$, $p = 0.001$), cognition ($F_{df=1} = 11.606$, $p = 0.001$), and social relations ($F_{df=1} = 4.130$, $p = 0.043$). Sex influences preferences for cognition ($F_{df=1} = 8.978$,
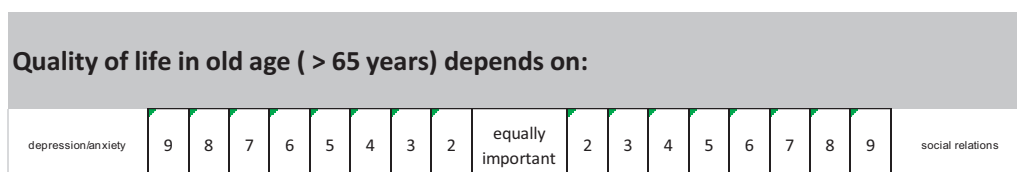

Quality of life in old age (> 65 years) depends on:

| depression/anxiety | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | equally important | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | social relations |

Fig. 1. Sample items for determining the preferences.