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The impact of primary care on health-related quality of life in elderly adults: assessment using EuroQol-5D in a case-control analytical study

Daniela Carrió-Mut (DCM): Department of Nursing, Faculty of Health Sciences, European University of Valencia, 46010 Valencia, Spain. Pedreguer Health Centre. Denia. Alicante, Spain.
ORCID: https://orcid.org/0000-0002-2239-160X

José Vte Carmona-Simarro (JVC): PhD. Department of Nursing, Faculty of Health Sciences, European University of Valencia, 46010 Valencia, Spain.
ORCID: https://orcid.org/0000-0003-4550-0685

Correspondence: José Vte Carmona-Simarro • josevicente.carmona@universidadeuropea.es

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CONTRIBUTIONS OF THE AUTHORS

JVC / DCM: Conceptualisation, Data curating, Acquisition of collections, Research, Methodology, Project administration, Resources, Validation, Visualisation, Drawing up the original draft, reviewing and editing the text.

JVC / DCM: Methodology, Supervision, Validation, Visualisation, reviewing and editing the text.

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ABSTRACT

Introduction. This observational analytical case-control study was conducted in the Self-Governing Region of Valencia, Spain. The aim was to research factors associated with health-related quality of life (HRQoL) in older people seen in primary care.

Goal. To assess health-related quality of life (HRQoL) in a group of cases attending primary care versus a control group which had not used this service, analysing the differences in their perception of physical, mental and social well-being, together with the biopsychosocial factors associated with their health status and access to health care.

Methods. We selected 30 cases (patients attending primary care) and 30 controls (people who did not use these services in the 12 months previous to the study), matched by age, gender and geographical location. Socio-demographic, clinical and lifestyle data were collected. HRQoL was assessed using the EuroQol-5D and the Visual Analogue Scale (VAS). Odds ratios (OR) with 95% confidence intervals were calculated and Chi-square, Fisher's exact test and Mann-Whitney U tests were applied.

Results. An odds ratio (OR) of 0.74 was obtained, showing that patients attending primary care have a lower relative likelihood of having a better health-related quality of life (HRQoL) compared to the control group.

Discussion. This result suggests that the sample analysed includes mainly cases with greater health needs and a more impaired HRQoL relative to subjects who do not require medical care at the primary care level.

INTRODUCTION

THE GENERAL CONTEXT OF THE PROBLEM: THE RELEVANCE OF HRQOL

Health-related quality of life (HRQoL) is a key indicator in public health studies, as it assesses the impact that health status has on people's physical, psychological and social well-being, including their own subjective perspective. HRQoL is especially useful for monitoring the health of populations, identifying social inequalities, and evaluating the effectiveness of health interventions and public policies.

THE IMPORTANCE OF ASSESSING THE IMPACT OF PRIMARY CARE ON HRQoL

Assessing the impact of primary care on health-related quality of life (HRQoL) is essential because of the central role that this level of care plays in health systems. Primary care acts as the gateway to the health system, providing accessibility, continuity and comprehensive care based on a biopsychosocial approach.

A BRIEF DESCRIPTION OF THE EUROQOL-5D QUESTIONNAIRE AS A VALID TOOL FOR MEASURING HRQoL

The EuroQol-5D questionnaire (EQ-5D) is a validated and widely used tool for measuring HRQoL in various different populations. It consists of two main parts: a descriptive system and a visual analogue scale (VAS). The descriptive part assesses five key aspects of health: mobility, self-care, usual activities, pain/discomfort and anxiety/depression. Each aspect is divided up into three levels of severity. In addition, the VAS allows people to rate their own health status on a scale from 0 (the worst imaginable state) to 100 (the best imaginable state).

PREVIOUS STUDIES ON THE USE OF THE EUROQOL-5D TO ASSESS HRQoL AND APPLICATION IN PRIMARY CARE

Previous studies on the use of the EuroQol-5D (EQ-5D) to assess HRQoL have shown its usefulness in a variety of different settings, including primary care. It has been used to measure the impact of diseases and treatment on HRQoL in patients with conditions such as lower back pain, bronchitis and osteoarthrosis of the knee, showing sensitivity to changes in health status resulting from medical interventions: heart failure, COVID and post critical illness.

RATIONALE FOR THE STUDY

The rationale for this study lies in the need to explore the impact of primary care on HRQoL in the elderly. The analytical case-control design allows us to establish associations between sociodemographic and clinical variables and health status.

GOALS

To assess HRQoL in a group of cases attending primary care versus a control group who do not use these services, analysing the differences in their perception of their own physical, mental and social well-being, as well as the biopsychosocial factors associated with their state of health and access to health care.

METHODS

DESIGN OF THE STUDY

An analytical observational study of cases and a control group. The CONSORT guide was used for the structure of this research.

CONTEXT

Recruitment took place from 1 to 30 November 2024 at the Pedreguer Health Centre, Denia, Alicante, Spain. The 30 cases (patients exposed to primary care interventions) and 30 people in the control group (without recent exposure to these services) were selected by consecutive sampling, with inclusion criteria based on geographical accessibility. Data collection was performed using a questionnaire of sociodemographic variables and the EuroQol-5D questionnaire in the version validated for Spain. The process included an informed consent phase with a protocolised explanation of the goals of the study, ensuring confidentiality in accordance with data protection regulations.

PARTICIPANTS

Selection criteria

The cases selected were patients from the general population attending the primary care service for any kind of disorder or disease; the specific cause or other health aspects related to their use of the health system was not recorded. The cases included persons of legal age of both genders, and were matched by gender as an initial strategy, leaving other clinical factors for later analysis. The control group was drawn from the same source population as the cases, thus ensuring the internal validity of the study. Thie control group consisted of people who had not used primary care services in the last 12 months prior to completing the questionnaire, which allowed us to verify that they had no association with the exposure studied. In addition, we ensured that they had a similar socio-demographic profile to the cases (homogeneity in basic characteristics) and were also matched by gender to maintain comparability between the two groups. In this study, 30 cases and an equal number of controls were selected, establishing a 1:1 matching ratio.

Variables and data sources

The variables considered in the study encompassed sociodemographic aspects, clinical factors and lifestyles, providing a comprehensive framework for analysis. Sociodemographic variables included marital status, number of cohabitants, role as primary caregiver, and number of children. For clinical factors, the most limiting diagnosis, the presence of comorbidities, the number of drugs prescribed, the number of hospital admissions and the duration of hospital admissions (days spent in hospital) were all assessed. Lifestyle was analysed by means of smoking and physical activity.

The EuroQol-5D questionnaire was used, which combines the scores of the 5 aspects of the questionnaire (mobility, self-care, usual activities, pain/discomfort and anxiety/depression). Each section has 5 levels of severity (1: no problems; 5: extreme problems/impossibility). It also includes the Visual Analogue Scale (VAS), where participants rate their health status on a scale from 0 to 100, in which 0 is the worst imaginable and 100 the best.

Bias

To ensure the validity of the results and address potential sources of bias, several different measures were implemented throughout the study. Cases were selected according to clear and precise diagnostic criteria, while the control group was drawn from the same source population, reducing selection bias. In addition, matching by key variables such as age, gender and geographic location was performed, ensuring comparability between the groups. To avoid measurement bias, the validated EuroQol EQ-5D questionnaire was used. Interviewers were trained to avoid subjective influences during data collection and worked under a blinding scheme, not knowing whether participants belonged to the case or control group.

Sample size

The sample size was determined with the aim of exploring the feasibility of the design, identifying potential methodological issues and obtaining preliminary estimates of key parameters such as exposure frequencies and effect sizes (odds ratios). As this was a pilot study, the aim was not to achieve high statistical accuracy, but rather to generate initial data to begin the planning of a larger study.

Quantitative variables

Quantitative variables were analysed using appropriate statistical procedures to ensure the validity of the results and comparability between groups. The main quantitative variable considered was the Visual Analogue Scale (VAS). This variable was treated as continuous in the analysis.

Statistical methods

The statistical methods employed included calculation of the odds ratio (OR) as the main measurement of association, with 95% confidence intervals and a significance level set at $p<0.05$. In the descriptive analysis, categorical variables were summarised using absolute frequencies and percentages, while continuous variables were analysed using measurements of central tendency (mean) and dispersion (standard deviation). For the inferential analysis, specific tests were applied according to the type of variable: the Chi-Square test or Fisher's exact test for categorical variables, and the Mann-Whitney U test for continuous variables, given that the assumptions of normality were not met in all the variables.

RESULTS

60 participants were included in the study, divided into two groups: 30 subjects in the case group and 30 in the control group. After applying the inclusion and exclusion criteria, all 60 participants were confirmed as eligible. All subjects included in the study completed the full follow-up and there were no losses during the process.

UNIVARIATE ANALYSIS

Case group

Socio-demographic characteristics. Regarding gender, 50% were men and 50% were women. The mean age was 81.73±4.13 years, with a range between 75 and 91 years. Forty-three percent were married and 46.4% were widowed. Forty per cent lived with their partner compared to 30% living alone. The family type caregiver ranked first with 83.3%.

Clinical characteristics. The most limiting diagnosis was chronic pain at 46.7%, followed by acute illness at 13.3% and cognitive illness at 10%. In particular, lower limb pain was present in 33.3%, followed by respiratory tract infections at 10% and others in smaller proportions related to urinary incontinence and emotional problems. 90% had some degree of HTN, 23.3% had DM, 13.3% had obesity and 80% had dyslipidaemia.

In relation to medication use, the average for the sample of subjects was 8.4 medications, with a range of 1-20%.

Hospital admissions occurred in 30% of the cases at least once, although 70% stated that they were not recent admissions. 3.3% claimed to have been admitted up to three times. Days of hospitalisation ranged from 3 days to prolonged stays of 25 days.

With regard to habits, only 10% were current smokers and 73.3% reported some degree of physical activity.

According to the specific sections of the EuroQol-5D questionnaire:

- Mobility. 63.3% reported moderate problems, while 36.7% had no problems at all.
- Personal care. The majority (66.7%) had no problems; however, 30% reported moderate problems and 3.3% reported severe problems.
- Usual activities. 53.3% had no problems; however, 40% reported moderate and 3.3% severe problems.
- Pain/discomfort. 60% had moderate and 13.3% severe problems; only 26.7% reported no problems.
- Anxiety/depression. 40% had no problems, 40% had moderate problems and 20% had severe problems.

Perceived quality of life, Visual Analogue Scale (VAS): the average score in the case group (range 0 to 100) was 66.7±2.51.

Control group

Socio-demographic characteristics. Regarding gender, 56.7% were men and 43.3% women. The mean age was 81.13±3.97 years, with a range between 75 and 90 years. 26.6 % were married and 46.7% were widowed. 23.3% lived with their partner compared to 16.7% who lived alone. The family type caregiver ranked first with 80%.

Clinical features. The most limiting diagnosis was chronic pain (16.7%), followed by cognitive impairment (20%). A total of 16.7% reported no limitations. Of these, 90% had some degree of hypertension, 16.7% had DM, 10% had obesity and/or dyslipidaemia, 86.7% had dyslipidaemia, and 16.7% had some degree of hypertension, 16.7% had DM, 10% had obesity and 86.7% had dyslipidaemia.

Hospital admissions occurred at least once in 36.7% of the cases, although 73.3% stated that they were not recent admissions. 3.3% claimed to have been admitted up to three times. The length of hospitalisation ranged from 3 days to prolonged stays of 19 days.

Regarding habits, only 36.7% were current smokers and 80% reported some degree of physical activity.

According to the specific sections of the EuroQol-5D questionnaire:

- Mobility. 63.3% reported moderate problems, while 36.7% had no problems at all.
- Personal care. The majority (70%) had no problems, while 30% reported moderate problems.
- Usual activities. 33.3% had no problems, 63.3% reported moderate problems.
- Pain/discomfort. 66.7% had moderate and 10% severe problems; only 23.3% reported no problems.
- Anxiety/depression. 50% had no problems, 36.7% had moderate problems and 13.3% had severe problems.

Perceived quality of life, Visual Analogue Scale (VAS): the average score in the control group (range 0 to 100) was 77.3±1.81.

OTHER ANALYSES: ODDS RATIO

The OR was 0.74, so patients attending primary care have an OR of 0.74 compared to the control group, implying that they have a lower relative probability of having a better HRQoL compared to those who do not need to go to the health centre. This suggests that we are dealing with a sample of cases with greater health needs and a worse HRQoL compared to those people who do not require medical attention at the primary health care level.

Bivariate analysis

Table 1: EuroQol-5D category cross-tabulations between cases and the control group. Source: prepared by the authors.

Variable	Statistic	P value
Mobility	Fisher's exact test	0.001
Personal care	Pearson chi-square	0.000
Usual activities	Pearson chi-square	0.000
Pain	Pearson chi-square	0.000
Anxiety	Pearson chi-square	0.000

P-values <0.05 were obtained for each of the EuroQol-5D variables between cases and the control group, so there are statistically significant differences between the constructs.

Mann-Whitney U test

To assess statistically significant differences between the VAS of the case group and the control group, the Mann-Whitney U statistic was used. The mean VAS of the cases was 66.7.3±2.51 (standard error measure 0.46) and that of the control group was 77.3±1.81 (standard error measure 0.33). In the paired samples correlation, a correlation index (r) of 0.399 was obtained with a p-value of 0.029. The Mann-Whitney U test showed the following results (Figure 2). Statistically significant differences were obtained between the VAS of the case group and the control group, p=0.024.

Table 2: Paired samples test. Source: prepared by the authors.

Pair	Lower CI	Higher CI	t	gl	P value
VAS cases / VAS control group	-1.972	-0.1478	-2.377	29	0.024

DISCUSSION

MAIN RESULTS FOR THE STUDY GOALS

The caseload consisted of older adults with a high average age (81) and complex clinical features due to comorbidities such as hypertension, dyslipidaemia and chronic pain. Most were dependent on family care and face functional limitations related to mobility, usual activities and self-care, as well as significant levels of pain and emotional distress. Although a considerable proportion were physically active (73%), high levels of polypharmacy (an average of more than eight medications) reflect the health burden associated with this group. The control group showed better functional indicators and a lower clinical burden compared to the case group, especially in terms of mobility, self-care and regular physical activity. However, both groups shared common characteristics such as a high prevalence of HTN, dyslipidaemia and significant levels of pain/discomfort affecting their perceived quality of life. These findings are consistent with the typical characteristics of a geriatric population with multiple clinical and social needs.

The results between the crosstabs of the EuroQol-5D categories between cases and the control group showed a significant association ($p<0.05$). This implies that the presence of severe, moderate or no problems are different in the two groups.

A significant difference was obtained between the VAS scores of cases and controls ($p<0.05$). This implies that cases have a significantly lower score compared to the control group. Furthermore, the confidence interval reinforces this conclusion. In practical terms, these results suggest that the variable assessed (VAS) differs significantly between the case and control groups.

LIMITATIONS

The main limitations were related to selection bias, as the cases and control group may not have been representative of the general population and we might have underestimated or overestimated the association between attending primary care and not attending primary care. Hence this study is defined as a pilot and exploratory study, hopefully leading to further research with a representative sample.

INTERPRETATION

The data presented reflects a comparative analysis of older adults in two groups: cases with a higher clinical and functional burden, and a control group with better health indicators.

With regard to the clinical and functional characteristics of the case group, a high average age of 81 was observed, with multiple comorbidities such as arterial hypertension, dyslipidaemia and chronic pain. Likewise, there was a high dependence on family care due to functional limitations in mobility, usual activities and personal care. Significant polypharmacy was associated with an average of more than eight medications. Although 73% were physically active, levels of pain and emotional distress were high, affecting subjects' perceived quality of life.

With regard to clinical and functional characteristics, the control group showed better general functionality, especially in terms of mobility, personal care and regular physical activity. In this case, there was less clinical burden compared to the case group, although they shared high prevalences of hypertension, dyslipidaemia and pain/discomfort.

The results underline the clinical complexity of the case group compared to the control group. Polypharmacy and functional limitations are clear indicators of the negative impact on quality of life in cases, while the control group had a more favourable profile.

With regard to Perceived Quality of Life (EuroQol-5D) a significant association was found between the EuroQol-5D categories and the two groups ($p<0.05$). This implies that the severity or absence of problems differs between cases and the control group. Visual Analogue Scale (VAS) scores were significantly lower in the case group ($p<0.05$), reinforcing the perception of a poorer quality of life in this group.

These differences reflect how clinical conditions negatively affect the subjective perception of well-being in the case group. The significant association suggests that interventions should focus on improving functionality and reducing emotional distress.

Generality

The generalisation of these results to other geriatric populations should be considered with caution due to the following limitations: the specificity of the clinical and social profile of the group studied, potential differences in health care systems and culture, and methodological constraints such as the inclusion and exclusion criteria.

CONCLUSIONS

The results highlight the complex needs of the geriatric group with a high clinical burden. Polypharmacy, functional limitations and emotional distress significantly impact their quality of life. Moreover, although the control group presented better indicators, they shared common challenges such as chronic comorbidities. This reinforces the importance of integrated management focused on reducing polypharmacy through regular assessments, promoting personalised physical activity programmes and addressing emotional distress to improve the subjective perception of well-being.

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