Correlates of Health-Related Quality of Life in Community-Dwelling Older adults in Guadeloupe (French West Indies): Results from the KASADS Study

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Abstract

OBJECTIVES: This study aims to determine the correlates of Health-Related Quality of Life (HRQoL) in community-dwelling older adults in Guadeloupe.

METHODS: We used the KARukera Study of Aging - Drugs Storage (KASADS), an observational, cross-sectional study on community-dwelling older people living in Guadeloupe. A visual analogue scale ranging from 0 to 100 was used to assess HRQoL.

RESULTS: The study sample consisted of 115 patients aged 65 years or older; 67.8% were women. Participants were 76 (± 7.8) years old with a mean HRQoL of 66.2 (±20.3). The correlates of HRQoL were complaints of pain (p<0.001) and IADL dependency (p=0.030) after adjustment. We found no significant interactions between HRQoL and the other variables, such as marital status, socio-educational level and cognitive decline.

CONCLUSION: Pain and IADL dependency were independently associated with lower HRQoL in community-dwelling older people in Guadeloupe.

Introduction

Quality of life (QoL) refers to “an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns”.1

Two main types of factors determine the quality of life of an individual: objective factors (standard of living, health status, functional abilities, social participation and contacts, leisure activities) and subjective factors (subjective health, the meaning of life)2,3. A proxy with proper training can assess objective QoL. Subjective QoL reflects someone's feelings about their psychological, social, and medical situation according to their standards and comparisons with others4. It is a multidimensional measure representing a person's acceptance of their condition, taking into account several dimensions of health (physical, mental, and the support of those around them). Therefore, older adults’ “objective” state of health would only partially determine their subjective health status, a standard proxy for health-related quality of life (HRQoL), which considers health’s impact on everyday life. Indeed, this satisfaction is primarily the result of the comparison they make with the state of health of other seniors of their age5. These social comparisons also help define expectations or aspirations when assessing QoL. They partly explain the "well-being paradox" (the fact that older people with significant limitations in their daily lives may rate their well-being positively).6 HRQoL may also be useful indirectly to measure the impact of a disease or assess the effectiveness of a treatment or care plan without a purely medical perspective. Many factors are associated with lower levels of HRQoL. Among them, pain shows the strongest association, whether people suffer from cognitive impairment or not. Severity and insight seem to modulate the association with HRQoL in people with cognitive impairment: older people with mild or
moderate dementia and good insight present lower levels of quality of life than people without cognitive impairment and people with moderate/severe dementia with low insight.

Health-related quality of life (HRQoL) consistently and significantly predicts adverse health outcomes (including disability, neurodegenerative diseases, and mortality)\(^7,8\). Despite a growing body of studies on older people’s HRQoL, few focus on older people’s HRQoL in the Caribbean. Girvan\(^9\) describes the Caribbean region as an “ethnohistoric zone and a transnational community,” highlighting the cultural similarities between the territories. Demographic trends show a steady decline in birth and mortality rates, coupled with a distinctive international migration pattern that inflates the rate of older people\(^10\). For instance, Guadeloupe, a French-Caribbean territory, has been the youngest French territory for decades, but it should become one of the oldest in 10 years. Compared to mainland France, the older Caribbean population suffers from a higher prevalence of dementia, specific Parkinsonian syndromes probably linked to environmental factors, metabolic syndromes, and, overall, higher dependency rates at a younger age.\(^11\) The objective of this study was to determine the correlates of HRQoL in older people in the Caribbean islands. Our study took advantage of the KASADS study database, a baseline screening conducted in Guadeloupe.

**Methods**

**Study design**

This observational, cross-sectional study in Guadeloupe (a French department in the Caribbean) uses the Karukera Study Aging Drug Storage (KASADS) study. In summary, the KASADS study aimed to assess the association between drug storage and the risk of frailty in older people (> 65 years) living at home in Guadeloupe. In the KASADS cohort, two general medicine interns trained in geriatric assessment tools collected demographic data regarding frailty syndrome, medication storage, cognitive function, algal complaints, functional status, and health-related quality of life. To limit selection bias, the participating general practitioners systematically asked all their patients who met the inclusion criteria to participate in the study until they each reached 10 participants. The patients who agreed to participate received an information leaflet specifying the modalities of the study and gave written informed consent. The Ethics Committee of the Guadeloupe University Hospital approved this study.

**Variables**

**Subjective HRQoL**: Subjective HRQoL was collected using a visual analogue scale (VAS) assessing subjective health, a proxy for HRQoL. This continuous scale is a 100mm line with the ends marked "very poor" and "very good." Participants were asked to draw a line perpendicular to the VAS line to represent their perceived health-related quality of life. The score was the distance in centimeter’s from the lower end to the mark.\(^11\)

**Other variables**
We used the Instrumental Activities of Daily Living scale (IADL)\textsuperscript{12} and Katz’ ADL scale\textsuperscript{13} to assess the functional status of the participants and the Mini-Mental State Examination (MMSE) to assess cognitive functions. The threshold for suspicion of cognitive impairment was 24/30\textsuperscript{14}. The participants estimated their pain with a visual analogue scale. The participants’ socio-demographic characteristics and comorbidities were also collected: age, sex, educational level, and marital status for sociodemographic variables; absence or presence of diabetes, hypertension, dyslipidemia, and Body Mass Index (BMI) for comorbidities.

**Statistical analysis**

We used chi-squared tests for categorical variables and t-tests for continuous variables. We performed linear regression analyses to determine the correlates of HRQoL and searched for possible interaction effects in multivariate regression models. We used a fixed p-value cut-off of 0.05 to determine significance. All analyses were performed with the RStudio software (v.3.0.2. 21).

**Results**

**Study sample**

We included 115 community-dwelling people aged 65 and older. The average age of the participants was 76.0 ±7.8 years, with a BMI of 26.8 ± 5.3 and 67.8% of women. 43.5% had diabetes, 87.0% had hypertension, 45.2% had dyslipidemia, and 58.3% had obesity. The mean HRQoL score was 66.2±20.3 and 51.6±21.7 for pain. The mean IADL score was 3.4±1.0, and the mean ADL score was 5.1±1.0.

Table 2 shows that there is an association between HRQoL and pain (correlation coefficient: 0.298; p=0.001), between HRQoL and IADL (coefficient: 0.254; p=0.006), and between HRQoL and a low socio-educational level (p=0.014).

Table 3 shows the correlates of HRQoL in multivariate analysis. The adjustment variables retained for the multivariate model were those exhibiting a significant association (p<0.20) with HRQoL in univariate analysis. Pain (p<0.001) and IADL (p=0.030) were associated with HRQoL. There was no association between cognitive impairment, socio-educational level and quality of life, and there was no interaction effect between cognitive impairment and pain on quality of life.

**Discussion**

Our objective was to determine the correlates of HRQoL in the general older population in Guadeloupe. We found that complaints of pain were associated with poorer HRQoL. Several studies have also found that pain\textsuperscript{16,17} was associated with an altered HRQoL. In 2003, Jakobsson\textsuperscript{18,19} found this association in the Swedish population over 70 - including after stratification on age. Lacey\textsuperscript{17} et al. found similar results in Ireland in 2014 and established a relationship between pain and physical and mental components of HRQoL, using the SF-12 questionnaire, a validated HRQoL assessment. It is difficult to report on the pain
experience itself. There are several components to pain, including the affective-emotional one. Chronic pain is strongly associated with incident anxiety and depression\textsuperscript{15,16}, which contributes to the deterioration of quality of life.

The diagnosis of pain in older people is challenging. People with cognitive disorders may underestimate their pain in self-rated scales due to difficulties in perception, expression, analytical faculties, or global understanding.\textsuperscript{20,21} Hunt et al. showed that proxies tend to report more pain than participants. They found that up to 30\% of older people suffering from various types of pain took no pain medication.\textsuperscript{22}

As untreated pain is the cause of functional limitations and impacts quality of life, pain management is essential. Assessing physical quality of life requires self- or proxy-assessment, which accounts for context and comorbidities, to select the appropriate treatment. Although this association is often found in the literature, alleviating pain and complaints of pain does not necessarily improve quality of life.

In our study, impairment of IADL was associated with lower quality of life. This result is even more relevant as studies show an association between pain and IADL impairment. Covinsky et al. in 2009 and Shega et al. in 2010\textsuperscript{23,24} showed that significant pain correlates with functional limitations and their early appearance, especially with high-prevalence pathologies in later life, such as osteoarticular disorders. Location of the pain (for example, lower limbs) is a risk factor for dependence and lower quality of life.

We found no association between neurocognitive impairment and quality of life (correlation coefficient: 0.129; p=0.171). Although the data available in the literature generally agree with this result, it depends on the population or the assessment instruments. In a study on subjective quality of life, Baptista et al. show that people with mild cognitive impairment were more aware of their impairment than those with severe cognitive impairment. Awareness of the disorder was associated with lower reported quality of life than those unaware.\textsuperscript{25} Hill et al. also showed that the mere complaint of subjective cognitive impairment would negatively impact the quality of life of individuals compared to those without such complaints.\textsuperscript{26} On the other hand, in advanced stages of neurocognitive disorders, certain studies such as that of Selwood et al. or Missotten et al. show no association between the evolution of cognitive disorders and quality of life over time in cohort studies\textsuperscript{27,28}.

Assessing subjective HRQoL is a challenge in older people suffering from cognitive impairment. Self-report methods may be inappropriate in people with severe disorders, as they involve understanding the complex concept of quality of life. Nevertheless, various validated HRQoL scales exist for patients with dementia, depending on the type of dementia, the degree of severity of the disease, and the place of living of the patient\textsuperscript{29}.

In our study, in the absence of other assessments of cognition, only the threshold of 24/30 on the MMSE allowed us to classify our participants according to their level of cognitive impairment. A more thorough diagnostic approach could have allowed us to characterise them more precisely and propose complementary, more appropriate assessments.
Other studies also demonstrate the significant contribution of social support to predict quality of life and as a buffer to stress.\textsuperscript{30}

The "quality of life gap theory" defines quality of life as the gap between someone's ideal life and the perceived reality. Individuals with poor "objective" health might thus report good quality of life when reality matches their expectations.\textsuperscript{32,33}

Other factors are crucial to the quality of life of older people, for instance, social support from family or professional caregivers or participation in social activities (seniors' club, Alzheimer's network). This type of assistance reduces the daily organisational burden and the preservation of the social fabric and is a pivotal determinant of quality of life.\textsuperscript{31}

Specific studies of these characteristics in the Guadeloupian population could help refine our knowledge of the determinants of health and HRQoL in this population.

**Clinical impact of the study**

Our results provide an opportunity to emphasise the relevance of a systematic assessment of pain during home and office visits, whether by the general practitioner or the nurses.

Since pain negatively influences quality of life, optimal management of this former is essential, especially since older people report higher scores than younger adults. Given the data in the literature and our results, analogue scales are efficient tools, easily implemented in routine care. Indeed, the evolution of the scores is easy to trace in the medical record. Nevertheless, a regular reassessment of the relevance of this tool is essential in the case of neurocognitive disorders. Nevertheless, managing pain in older adult to improve QoL is an objective to which GPs will be sensitive.

In regard to IADL dependency, the GPs interest remains rather modest in spite of many geriatricians, neurologists and others efforts for several years. Nevertheless, our result is very interesting concern the future of management strategies for dependency to IADL, because preserving QoL is fundamental for GPs.

Our analysis presents several limitations. First, the design of our study does not allow for the determination of causal relationships between pain, IADL impairment, and HRQoL. Second, self-reported health is a unidimensional proxy for HRQoL. As such, it fails to capture the multidimensionality of this latter. Nevertheless, despite a small number of participants (115), study participants were representative of the older population in terms of pathologies and other associated comorbidities.

**Conclusion**

In our study, pain and dependency to IADL correlate with HRQoL. Although we found no association between suspected neurocognitive disorders and HRQoL, nor did we find an interaction effect between complaints of pain and neurocognitive disorders, detecting these three syndromes in community-dwelling
older people is crucial for the prevention of adverse health events. Further studies are needed to confirm and consolidate our results.

**Abbreviations**

ADL: Activities of Daily Living  
BMI: Body Mass Index  
CHU: Centre Hospitalier Universitaire  
GP: General Practician  
HRQoL: Health-Related Quality of Life  
IADL: Instrumental Activities of Daily Living  
INSERM: Institut Nationale de la Santé et de la Recherche Médicale  
KASADS: KArukera Study of Aging - Drugs Storage  
LAMIA: Laboratoire de Mathématique et Informatique Appliquée  
MMSE: Mini Mental State Examination

**Declarations**

**Ethical Approval and Consent to participate**

All participants provided informed consent at baseline. The study was approved by the Ethics Committee of the University Hospital of Guadeloupe (Ref: A6_19_10_01_KASADS).

**Consent for publication**

All authors discussed the findings and approved the final version of the manuscript.

**Availability of supporting data**

The datasets used and/or analysed during the current study available from the corresponding author on reasonable request.

**Author Contributions**

Nadine Simo-Tabue (NST) and Maturin Tabue-Teguo (M.TT) designed the study. Gebhard Pierre and NST. collected the data. Denis Boucaud Maitre (DBM), M.TT. and Roxane Villeneuve developed the data
analysis strategy. NST analyzed the data. DBM, MTT, NST, Leila Rinaldo, Moustapha Drame and Jean-François Dartigues interpreted the results and drafted the manuscript.

Competing interests

The authors declare no competing interests.

Funding

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References


Tables

**Table 1:** Characteristics of study participants - KASADS

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Total (n=115)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>76.0 (± 7.8)</td>
</tr>
<tr>
<td>Men</td>
<td>37 (32.2)</td>
</tr>
<tr>
<td>BMI (Kg /m²)</td>
<td>26.8 (± 5.3)</td>
</tr>
<tr>
<td>No diploma</td>
<td>39 (33.9)</td>
</tr>
<tr>
<td>Lives alone</td>
<td>67 (58.3)</td>
</tr>
<tr>
<td>Diabète</td>
<td>50 (43.5)</td>
</tr>
<tr>
<td>HTA</td>
<td>100 (87.0)</td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>52 (45.2)</td>
</tr>
<tr>
<td>HRQoL/100</td>
<td>66.2 (± 20.3)</td>
</tr>
<tr>
<td>Pain/100</td>
<td>51.6 (± 21.7)</td>
</tr>
<tr>
<td>IADL /4</td>
<td>3.4 (± 1.0)</td>
</tr>
</tbody>
</table>

*Notes:* Results are presented as means ± SDs, or percentages. *BMI:* Body Mass Index; *HRQoL:* Health-related Quality of Life; *IADL:* Instrumental Activities of Daily Living; *SD:* standard deviation

**Associations between HRQoL and categorical variables**

**Table 2:** Associations between HRQoL score and categorical variables
### Qualitative variables

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>HRQoL</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>68.6 ± 21.7</td>
<td>0.395</td>
</tr>
<tr>
<td>Women</td>
<td>65.1 ± 19.7</td>
<td></td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>63.6 ± 21.4</td>
<td>0.103</td>
</tr>
<tr>
<td>Not single</td>
<td>70.0 ± 18.2</td>
<td></td>
</tr>
<tr>
<td><strong>Educational level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No diploma</td>
<td>59.8 ± 23.1</td>
<td><strong>0.014</strong></td>
</tr>
<tr>
<td>≥ 1 diploma</td>
<td>69.6 ± 18.0</td>
<td></td>
</tr>
<tr>
<td><strong>Age-related diseases</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>68.4 ± 20.5</td>
<td>0.317</td>
</tr>
<tr>
<td>No</td>
<td>64.6 ± 20.2</td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>66.3 ± 20.4</td>
<td>0.917</td>
</tr>
<tr>
<td>No</td>
<td>65.7 ± 20.3</td>
<td></td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>62.7 ± 19.6</td>
<td>0.086</td>
</tr>
<tr>
<td>No</td>
<td>69.2 ± 20.6</td>
<td></td>
</tr>
<tr>
<td>MMSE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive impairment (MMSE&lt;24)</td>
<td>64.7 ± 24.8</td>
<td>0.515</td>
</tr>
<tr>
<td>No cognitive impairment (MMSE&gt;24)</td>
<td>66.9 ± 17.4</td>
<td></td>
</tr>
</tbody>
</table>

### Quantitative variables

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>HRQoL</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.092</td>
<td>0.328</td>
</tr>
<tr>
<td>BMI</td>
<td>0.065</td>
<td>0.49</td>
</tr>
</tbody>
</table>
Dependency to IADL  |  0.254  |  0.006  
Pain  |  0.298  |  0.001  

*Notes: MMSE: Mini-Mental State Examination; HRQoL: Health-related Quality of Life, BMI: Body Mass Index; IADL: Instrumental Activities of Daily Living*

**Table 3:** Determinants of HRQoL: multivariate analyses

<table>
<thead>
<tr>
<th>Explanatory variable</th>
<th>Estimate</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyslipidemia</td>
<td>-5.98</td>
<td>0.107</td>
</tr>
<tr>
<td><strong>Pain</strong></td>
<td><strong>0.30</strong></td>
<td>&lt;<strong>0.001</strong></td>
</tr>
<tr>
<td>No diploma</td>
<td>-2.14</td>
<td>0.606</td>
</tr>
<tr>
<td>Lives alone</td>
<td>-5.13</td>
<td>0.1174</td>
</tr>
<tr>
<td><strong>Dependency to IADL</strong></td>
<td><strong>4.11</strong></td>
<td><strong>0.030</strong></td>
</tr>
</tbody>
</table>

*Notes: HRQoL: Health-related Quality of Life; IADL: Instrumental Activities of Daily Living*