



The gender role in the relationship between food-related perceived resources and quality of life among ecuadorian elderly

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Abstract

Individuals not only have a set of personal resources to carry out their activities, they also have a perception with respect to the availability of these resources. As people age, personal food-related perceived resources (FPR) become increasingly important, and these influence their quality of life (QOL). Since men and women differ in aspects like education, consumption and pensions, this study seeks to identify the gender role in the relationship between FPR and QOL among Ecuadorian elderly. The sample included elderly people of both sexes in the city of Guayaquil, Ecuador, with the application of stratified random sampling. The instrument included: FPR scale, satisfaction with food-related life scale (SWFLS) and the satisfaction with life scale (SWLS). The results indicated that those men and women who have a better perceived satisfaction with their economic situation are in physically and mentally good health, assign greater importance to family, are more satisfied with their food-related life, and have a higher number of FPR and therefore a better QOL. A relevant conclusion is that SWFLS and FPR are predictors of QOL among Ecuadorian elderly and that gender helps to explain the sign and magnitude of the relationship between these variables.

Keywords: cognitive quality of life; food-related perceived resources; unhealthy days; family importance.

Practical Application: Subjective indicators to evaluate the relation between food-related perceived resources and quality of life may allow government agencies to design public policies in a scenario of high rates of population aging.

1 Introduction

According to Pavot & Diener (2008), subjective quality of life (QOL) contains two elements: satisfaction with life (or the cognitive component) and subjective happiness (or the affective component). The most frequently used scale to measure satisfaction with life is the Satisfaction with Life Scale (SWLS) (Diener et al., 1985) and the Subjective Happiness Scale (SHS) is used to measure subjective happiness (Lyubomirsky & Lepper, 1999). In this work we use the SWLS to measure cognitive QOL, or simply QOL.

There is ample international evidence with respect to the variables that influence the QOL generally or the cognitive or affective component in particular. For example, Holden & Hatcher (2006), Noll (2007), Shams (2014) and Sok (2010) suggest adequate food, together with good health, a favorable economic situation and adequate family connections, can be positively associated with QOL in the elderly. Schneider et al. (2004) determined that an objective indicator of health has a weak effect on QOL, whereas the self-perception of health has a stronger effect. Angelini et al. (2012) concluded that the existence of conditions detrimental to health and the presence of physical limitations negatively influence the QOL of the European elderly. Angner et al. (2013) reported a significant association between

self-perception of health and QOL. For their part, Baernholdt et al. (2012) suggested that QOL is a multidimensional construct and that some mental health disorders related to depression, memory loss and functionality are inversely associated with QOL in the elderly in the United States.

Social support and family also play an important role in the elderly population. A greater level of social support is associated with an increase in happiness (Siu & Phillips, 2002) and with fewer feelings of loneliness (Wang et al., 2004). For example, Yeung & Fung (2007) and Yunong (2012) concluded that family support has a greater impact on QOL than the support of friends among the Chinese elderly. Chyi & Mao (2012); however, they determined that living with grandchildren or children negatively influences the happiness of Chinese elderly. The literature also recognizes that economic situation and social well-being influence the perception of happiness among the elderly population. According to Gray et al. (2008), external factors, such as economic difficulties and perceived social surroundings significantly influence the level of happiness. Nevertheless, Hsieh (2011) reported that the relationship between income and happiness in the American elderly was not significant. In Latin America (Graham & Felton, 2005) and South Africa (Kingdon & Knight,

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2006) it was concluded that the predictor variables of QOL are similar in every country.

The demographic aging of the population has become a subject of keen interest (Tomás et al., 2014) especially in developing countries such as Ecuador. A relevant aspect of the design of public policy has been to identify the predictor variables of the QOL. The aging population in Ecuador is a demographic phenomenon that began more than three decades ago, explained by the decreased fertility rate and increased life expectancy. According to Comisión Económica para América Latina y El Caribe (2016), the elderly population in Ecuador currently represents 11% of the total population; in 2050 this number will reach 21.8%. The aging index in Ecuador will pass from 40 elderly adults for every 100 young people today to 113 in 2050. In a recent study Bustamante et al. (2017) reported 14% of the elderly in the province of Guayas, Ecuador have no education, 53.1% have primary education, 20.6% have high school and only 12.4% have post-secondary education. According to the authors, 24.1% stated they were retired and 29.3% stated they were employed in the private sector; however, 63.3% stated they were not the primary source of household income. Bustamante et al. (2017) included 10 diseases on the questionnaire and almost all the respondents (95%) declared to be suffering from one or more diseases. Nevertheless, 54% of the elderly said they were highly satisfied with their lives.

There is relatively little in the literature on the relation between food-related perceived resources (FPR) and satisfaction with food-related life; nevertheless, there is some evidence about the relationship between food and QOL (Berenbaum, 2002; Hausman, 2005; Schnettler et al., 2015; Schnettler et al., 2018). Food is an important component of QOL (Grunert et al., 2007; Lobos et al., 2017; Match et al., 2005; Schnettler et al., 2017a; Schnettler et al., 2017b). The idea implicit in this concept is that people have a set of FPR and the sum of these resources contributes significantly to the satisfaction with food and therefore with QOL. This explains the relevance of knowing the role of resources in achieving greater satisfaction with life (Diener & Diener, 1993), including a variety of material, personal and social resources (Diener & Fujita, 1995). Dean et al. (2008) define resources as the means at an individual's disposal that can be used to achieve certain objectives in relation to food. However, the authors showed that each resource considered individually does not contribute to QOL, but the sum of the resources as a whole is an important predictor of QOL. In fact, Diener & Fujita (1995) concluded that the sum of all the resources predicts greater variance in the QOL indicators. Dean et al. (2008) assessed how the perceived levels of resources and their relative importance affect satisfaction with food among European elderly. The people who presented high levels in the different resources also showed greater satisfaction with food and a better QOL (Dean et al., 2008). Schnettler Morales et al. (2014) showed that the QOL of the elderly population is the relationship with satisfaction with food, self-perception of health and family interaction. More recently, Lobos et al. (2017) reported that FPR are a predictor of the satisfaction with food-related life scale (SWFLS) in the Chilean elderly. For the authors, the SWFLS serves as a transfer variable between FPR and QOL.

In this work, we discuss the role of gender in the relationship between FPR and QOL in a developing country. This is relevant because men and women differ in aspects like age, income level, education (Fokkema & Liefbroer, 2008; Jamieson et al., 2009), financial well-being (De Santis et al., 2008; Gaymu & Springer, 2012), autonomy (Akinyemi & Aransiola, 2010) and employment status (Noh et al., 2015). Bourque et al. (2005) have suggested that the predictor variables of QOL are different for men and women. According to the authors, QOL is more associated with social integration in women; QOL is more related to economic situation in men. These results are attributed to the social generalization of gender differences, where men are more focused on professional achievements and women on strengthening family life. Gaymu & Springer (2012) concluded that when people are in a relationship, the predictor variables of QOL are the same for the men and women. According to the authors, age, leisure activities, and living in a zone with ample services and adequate systems of public transport are significant for women. Oshio (2012) reported that men become more sensitive to family relationships, while social relationships become more important for women.

However, the evidence about the relationship between the FPR and QOL indicators is relatively scarce (Grunert et al., 2007; Diener & Fujita, 1995; Dean et al., 2008; Schnettler Morales et al., 2014). Evidence as to how this relationship is affected by gender is even scarcer (Gaymu & Springer, 2012; Tesch-Römer et al., 2008). This is a central aspect of this work and herein lies its main contribution. This is because in an aging society QOL becomes an important aspect in setting the agenda by policy-makers. Considering that the QOL of the elderly is garnering more and more attention, the design of public policies also requires not only objective but also subjective indicators, as Veenhoven (2008) suggests. Our opinion is that the provision of subjective indicators is important in order to consider the needs and desires of the elderly in the government's design of social intervention strategies. This work seeks to identify the gender role in the relationship between the FPR and QOL among Ecuadorian elderly. Therefore, the following hypotheses are proposed:

- **Hypothesis 1:** The level of perception of the food-related goals and resources differs between men and women.
- **Hypothesis 2:** Considered individually, the FPR are not significant in the prediction of QOL for men and women, but the sum of FPR is indeed significant; together with age, satisfaction with economic situation, unhealthy days, family importance and the SWFLS.

2 Methods

2.1 Sample and procedure

The Ethics Committee at the Universidad Católica Santiago de Guayaquil, Ecuador, accepted the study protocol. The inclusion criteria for the sample were men and women over 60 years, with no physical or mental disabilities, who voluntarily agreed to participate in the study and who signed the informed consent. A power analysis was carried out using the G*power 3.1 program. The minimum sample size was 694 participants (effect size

$d = 0.25$, α error prob = 0.05, power ($1 - \beta$ error prob) = 0.95, allocation ratio $N2/N1 = 1.0$).

The sample was recruited from the province of Guayas in Ecuador, composed of 25 communes. A two-stage sampling was carried out, stratified by clusters. The communes and retirement homes were used as clusters. A number of questionnaires was assigned to each commune proportional to the size of the population of the province. Then, in each retirement home the questionnaire allocation was also proportional to the size of the population of the commune. The retirement homes were selected by simple random sampling with the “random sample of cases” function in the Statistical Package for Social Sciences (IBM SPSS) v.22.

Personnel specially trained as interviewers visited the retirement homes and made contact with the elderly population that fulfilled the inclusion criteria. The interviewers explained to the elderly population the scope and objectives of this study and the confidentiality of the data obtained. Then, the interviewers provided detailed information of the questionnaire and asked the participants to voluntarily sign an informed consent. Given that retirement homes are long-stay residences for the elderly, all questionnaires were applied in these places, but according to a schedule previously agreed upon with the retirement home administrators. Thus, only institutionalized elderly people were included in the sample. The questionnaire was administered in person in March and July 2015.

2.2 Instrument

The questions included in the questionnaire asked the elderly people about the perceived levels of satisfaction with life and food-related life, for which they had to complete the SWLS and SWFLS. The SWLS and SWFLS are relatively short 5-item instruments grouped into a single dimension. The SWLS was developed so that a person can evaluate overall satisfaction with their life, while the SWFLS evaluates their satisfaction with foods and eating habits. In both cases, the person must indicate their level according to five statements using a 6-point Likert scale (1 = *strongly disagree* to 6 = *strongly agree*). In this study the Spanish-language version of the SWLS and the SWFLS was used. In a study performed with the elderly population of Ecuador (Schnettler et al., 2017a), both scales showed good levels of internal consistency (Cronbach's $\alpha = 0.85$ -0.86). On both scales the score can range from 6 to 36, and higher scores correspond to higher levels of SWLS and SWFLS.

The family importance scale (FIS) was developed by Burroughs & Rindfleisch (2002); it is a construct where the person must indicate their level of agreement with five statements using a 6-point Likert scale (1 = *strongly disagree* to 6 = *strongly agree*).

Hennessy et al. (1994) designed the health-related quality of life index (HRQoL); HWQOL is a multi-dimensional construct de 4-item that includes aspects related to physical and mental health as well as domains related to social functioning. The first item corresponds to a self-evaluation made by the person about their current state of general health using a 5-point Likert scale. The question is: “How would you say your health is in general?” (1 = *very poor* to 5 = *excellent*). The second and third items are related to the number of physically and mentally unhealthy days,

respectively, during the last 30 days. These last two questions were added together to develop the “unhealthy days index”. The fourth item is related to the number of unhealthy days that prevented them from performing common activities during the last 30 days.

The people were asked about satisfaction about their economic situation (SWES) using a 6-point Likert scale (1 = *extremely dissatisfied* to 6 = *extremely satisfied*). This scale was recoded into three categories (1 = *less than adequate*, 2 = *adequate* and 3 = *more than adequate*). The questionnaire also included questions about age, children living at home, education and number of domestic household goods.

2.3 Data analysis

A descriptive analysis was carried out: for the quantitative variables, the average values and standard deviation (SD) were calculated, while for the quantitative variables frequencies were calculated (%) (Monteagudo et al., 2015). We added the score of the sum of 22FPR. As a correlation measure the Pearson correlation coefficient also referred to as Pearson's r was used. The sum of 22FPR was incorporated into the model as a predictor of SWLS. We used the generalized linear model (GLM) (Nelder & Wedderburn, 1972; Wu, 2005) for the estimations. Thus, we assumed that the explained variable (SWLS) has a normal distribution and Identity is the link function. As goodness-of-fit measures, deviance (D^2) and likelihood-ratio (LR) were used. The Statistical Package for the Social Sciences (SPSS for Windows 22) was used for the data analysis.

3 Results

A total of 845 elderly people were approached. The response rate was 84.9%. Of all participants in the analytic sample ($N = 817$) 52.5% were men and 47.5% were women. We collected data from 817 participants (minimum required was 694) due to expected data loss and errors. A principal component analysis (PCA) of the SWLS revealed one factor accounted for 58.2% of the variance. Given that Cronbach's $\alpha = 0.79$, the internal consistency of the scale is considered adequate according to the literature (George & Mallery, 2003). A PCA of the SWFLS confirmed one factor for all items with 63.7% explained variance. The internal consistency was adequate (Cronbach's $\alpha = 0.85$). Finally, the sum of 22FPR scale revealed one factor accounting for 55.7% of the variance and presented adequate internal consistency (Cronbach's $\alpha = 0.88$). The scales showed their reliability ($\alpha > 0.7$) and validity (Kaiser-Meyer-Olkin - KMO - index > 0.5) in all cases.

The mean age of the participants was 74.3 (SD = 7.6, range = 60-101 years) for men and 73.1 (SD = 7.3, range = 60-95 years) for women. In this study, the mean SWLS score was 21.6 (SD = 4.5, range = 8-30) for men and 21.9 (SD = 4.6, range = 8-30) for women. The mean SWFLS score was 23.3 (SD = 4.0, range = 7-30) for men and 23.5 (SD = 4.0, range = 13-30) for women. No significant differences were observed in the variables SWLS and SWFLS between men and women according to a t-test. The sum of 22FPR score was 85.7 (SD = 12.1, range = 35-110) for men and 88.4 (SD = 12.5, range = 31-110) for women. The FIS score was 26.9 (SD = 4.4, range = 6-36) for men and 27.8 (SD = 4.3, range = 6-36) for

women (Table 1). Table 1 also presents an interpretation for the variables considered in the model and descriptive statistics of the participants (see Hypothesis 2).

The mean (SD) of goal importance are presented in Table 2. Also presented are the results of the t-test for mean equality (t-value) between men and women.

Table 3 presents the mean scores (SD) of 22FPR; the measures of correlation between SWLS and SWFLS are also given. The relationship between the SWLS and SWFLS was also significant for the total sample ($r = 0.53; p < 0.01$), for men ($r = 0.53; p < 0.01$) and for women ($r = 0.47; p < 0.01$). Finally, regression coefficients of the linear model are presented in Table 4.

Table 1. Interpretation of the variables and descriptive statistics of the participants ($N = 817$).

Variable	Interpretation	Men		Women		t-test ^a
		Mean or %	SD	Mean or %	SD	
Age	In years (range: 60-101)	74.3	7.6	73.1	7.3	2.33*
Gender	Dummy (1 = male, 0 = female)	52.5		47.5		
Children	Number (range: 0-7)	0.9	0.1	0.9	0.1	
Education	1 = no formal education	13.5		14.4		
	2 = primary incomplete	31.9		26.0		
	3 = primary complete	25.6		22.2		
	4 = secondary incomplete	10.0		12.9		
	5 = secondary complete	8.2		10.3		
	6 = technical incomplete	0.5		0.8		
	7 = technical complete	1.4		1.1		
	7 = college incomplete	5.6		8.0		
8 = college or more	3.3		4.4			
SWLS ^b	Number (range: 6-36)	21.6	4.5	21.9	4.6	-1.09
SWFLS ^c	Number (range: 6-36)	23.3	4.0	23.5	4.0	-0.93
SWES ^d	1 = less than adequate	7.2		6.7		
	2 = adequate	57.8		51.6		
	3 = more than adequate	35.0		41.8		
Self-perception health	1 = very poor	2.6		2.6		
	2 = fair	45.9		45.6		
	3 = good	32.4		35.8		
	4 = very good	15.9		13.9		
	5 = excellent	3.3		2.1		
Unhealthy days	In days (range: 0-30)	9.2	10.7	8.3	9.9	1.29
Quantity goods	Number (range: 0-10)	4.0	2.1	4.5	2.3	-3.38**
Family importance scale	Number (range: 6-36)	26.9	4.4	27.8	4.3	-2.90**
Sum of 22 resources	Number (range: 22-110)	85.7	12.1	88.4	12.5	-3.14**
<i>N</i>		429		388		

^at-test for mean equality (t-value). Significant difference at * $p < 0.05$, at ** $p < 0.01$ based on *t* statistics; ^bSatisfaction with Life Scale; ^cSatisfaction with Food-related Life Scale; ^dSatisfaction with Economic Situation.

Table 2. Mean (SD) of goal importance.

Food-related goals	Men		Women		t-test ^a
	Mean	SD	Mean	SD	
Choose food products and dishes that you enjoy eating	3.83	0.93	3.77	1.05	0.82
Eat a healthy diet	3.93	0.93	4.04	0.96	-1.69
Vary your menu and have a wide range of foods and dishes	3.85	0.94	3.93	0.95	-1.16
Eat your daily meals in nice surroundings	4.05	0.83	4.06	0.89	-0.25
Arrange shopping and preparation of meals so that you do not need help from others	2.96	1.30	3.36	1.24	-4.43**
Keep your expenditures on food as low as possible	3.86	1.15	3.98	1.13	-1.49
Eat your meals in the company of others	3.84	1.04	4.00	1.04	-2.17*
Maintain the cultural traditions of your country or region in relation to food and meals	3.14	1.10	3.27	1.14	-1.67
Control your weight through your choice of food	3.45	1.27	3.60	1.23	-1.70
Be able to cook meals for others	2.45	1.41	3.16	1.41	-7.18**
Choose food products and dishes that are quick and easy to prepare	2.88	1.31	3.34	1.24	-5.17**

Scale: 1-5; 1 = low importance; 5 = high importance. ^at-test for mean equality (t-value). Significant difference at * $p < 0.05$, at ** $p < 0.01$ based on *t* statistics.

Table 3. Mean (SD) of resources and the correlation with quality of life measures.

Food-related perceived resources	Level of agreement ^a				Pearson correlation coefficient ^b			
	Men		Women		Men		Women	
	Mean	SD	Mean	SD	SWLS	SWFLS	SWLS	SWFLS
Being able to taste and smell well	4.48	0.76	4.53	0.75	-0.02	0.11*	-0.01	0.12*
Access to food that is quick and easy to prepare	3.82	1.01	4.02	0.99	0.02	0.07	0.02	0.12*
Access to convenient means of public or private transportation	3.99	0.93	4.03	0.98	0.06	0.13**	0.00	0.05
Access to good food service providers, for example a day center or Meals on Wheels	3.93	0.92	4.04	0.95	0.14**	0.18**	0.11*	0.21**
Access to high quality food products and brands	3.61	1.04	3.71	1.11	0.16**	0.22**	0.18**	0.17**
Access to new and different types of food products	3.49	1.11	3.56	1.17	0.09	0.16**	0.06	0.20**
Access to organic food	3.74	0.98	3.73	1.03	0.13**	0.16**	0.09	0.07
A good general knowledge about food and nutrition	3.74	1.07	3.86	1.09	0.16**	0.21**	0.23**	0.26**
Being able to receive support from authorities or private organizations	3.71	1.32	3.88	1.24	0.00	0.16**	0.11*	0.13**
A good appetite	4.36	0.83	4.34	0.92	0.05	0.27**	0.12*	0.10
Good cooking skills	3.21	1.52	4.06	1.21	0.08	0.08	-0.01	0.01
Good dental health	3.87	1.20	4.14	1.07	0.19**	0.22**	0.24**	0.17**
Good food storage facilities, for example a freezer, refrigerator or cupboards	4.08	0.96	4.21	0.96	0.21**	0.20**	0.12*	0.08
Being in good health	4.15	0.95	4.18	0.98	0.15**	0.21**	0.18**	0.19**
Adequate income	3.89	1.17	3.86	1.19	0.30**	0.23**	0.16**	0.22**
Appropriate kitchen appliances and equipment to make cooking easier	3.88	0.97	4.09	0.94	0.25**	0.25**	0.15**	0.10
Access to food at low prices	4.22	0.90	4.27	0.87	-0.01	0.12*	-0.04	0.05
Being able to get around on foot	4.14	0.95	4.09	0.99	0.10*	0.22**	0.13*	0.12*
Sharing your meals with other people (including your partner or spouse)	3.95	1.04	4.04	0.97	0.15**	0.20**	0.12*	0.21**
A short distance to your normal food shops	4.03	0.98	4.09	0.95	0.14**	0.19**	0.08	0.16**
Having family members who will help you when needed	3.89	1.17	4.11	1.04	0.13**	0.28**	0.12*	0.21**
Having a neighbor or close friend who will help you when needed	3.53	1.37	3.55	1.39	0.28**	0.30	0.17**	0.30**
Sum of 22PR	85.7	12.1	88.4	12.5	0.24**	0.36**	0.20**	0.27**

^aMeasured on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*); ^bSignificance at * $p < 0.05$ and ** $p < 0.01$, two-tailed

Table 4. Regression coefficients from linear normal model.

	Men			Women		
	β_a	Sig.	SD	β_a	Sig.	SD
Constant	71.58	***	4.234	-12.31	**	4.851
Age ^b	-1.65	***	0.113	0.60	***	0.127
Age-squared ^b	0.01	***	0.009	-0.01	***	0.001
SWES						
1: less than adequate	-4.57	***	0.212	-4.50	***	0.231
2: adequate	-2.39	***	0.111	-3.29	***	0.114
3: more than adequate	ref.	.	.	ref.	.	.
Unhealthy days	-0.01	***	0.005	-0.05	***	0.005
Family importance	0.08	***	0.012	0.11	***	0.013
SWFLS	0.42	***	0.014	0.31	***	0.015
Sum of 22PR	0.03	***	0.005	0.03	***	0.005
Deviance full model (D_{fm})		5056.54			4647.28	
Deviance null model (D_{nm})		8540.94			7997.36	
Adjusted R^{2c}		0.41			0.42	
Likelihood-ratio χ^2		3484.39***			3350.08***	

^aSignificant variables at ** $p < 0.05$, at *** $p < 0.01$ based on Wald statistics; ^bThe theoretical turning point of 76.8 and 81.5 years of age for men and women, respectively, was obtained as: $\beta_{age} / (-2 \times \beta_{age-squared})$; ^cDeviance: $D^2 = (D_{nm} - D_{fl}) / D_{nm}$

3.1 Hypothesis 1

With respect to personal goals, Ecuadorian elderly rated 'eat in nice surroundings' and 'eat a healthy diet' as their most important goal, and 'be able to cook meals for others' as their least important goal (Table 2). The t-test suggests that the two

most important goals are not statistically different between men and women; however, the goal that received the lowest score had less importance for the men than for the women. The other goals that were statistically different were 'arrange shopping and preparation of meals so that you do not need help from others',

'eat your meals in the company of other people', and 'choose food products and dishes that are quick and easy to prepare'.

3.2 Hypothesis 2

The means (SD) for 22FPR are shown in Table 3. Male participants viewed themselves as well resourced with regard to 'being able to taste and smell well', 'access to food at low prices', and 'being able to get around on foot'. Female participants viewed themselves as well resourced with regard to 'being able to taste and smell well', 'a good appetite', and 'access to food at low prices'. However, men viewed themselves as poorly resourced in terms of 'good cooking skills', 'having a neighbor or close friend who will help you when needed', and 'access to high quality food products and brands'. Women viewed themselves as being poorly resourced in terms of 'having a neighbor or close friend who will help you when needed', and 'access to high quality food products and brands', 'access to new and different types of food products', and 'access to high quality food products and brands'. Table 3 also presents the correlations between SWLS and SWFLS with each resource for men and women. In most cases, resources such as 'access to high quality food products and brands', 'a good general knowledge about food and nutrition', 'good dental health', 'being in good health', and 'adequate income' are highly correlated with the SWLS and SWFLS. In some cases, resources showed modest correlations with the SWLS and SWFLS measures. In other cases, no significant correlations were observed between resources and the SWLS or the SWFLS measures. However, for men and women the correlation between the sum of 22FPR and the SWLS and SWFLS measures is illustrated at the bottom of Table 3. The sum of 22FPR is significantly correlated with the SWLS and SWFLS measures. This suggests that we should see higher levels of SWLS and SWFLS in elderly men and women with a higher sum of perceived resources.

The multivariate model to explain the elderly's SWLS revealed significant effects for age, age-squared, SWES, unhealthy days, family importance, SWFLS and sum of 22FPR (Table 4). The D^2 indicates that the contribution of the variables considered in the model is significant. The fit of model was significant at the level for the LR ($\chi^2 = 3484.39$), which suggests a good fit. The variables number of children, education, self-perception health, and number of goods were not significant in the model.

4 Discussion

The relationship between food consumption and QOL (Schnettler et al., 2017b; Shams, 2014; Sok, 2010) is a research topic that has scarcely been explored considering that demographic aging has become such a subject of interest (Tomás et al., 2014). In fact, aging has been related to food (Holden & Hatcher, 2006; Noll, 2007), self-perception of health (Schneider et al., 2004; Angelini et al., 2012; Angner et al., 2013) and FPR (Dean et al., 2008; Diener & Fujita, 1995; Grunert et al., 2007; Lobos et al., 2017; Schnettler Morales et al., 2014).

In this work, we found a significant relationship between the sum of 22FPR and the SWLS and SWFLS measures. This suggests the existence of a better QOL and a greater satisfaction with food in the elderly of both genders who perceive a greater

availability of FPR. The significant relationship between SWLS and SWFLS for the total sample, men and women suggests a strong association between the two variables. This means that the SWLS and SWFLS are positively and linearly related in the elderly of both genders. It may therefore be inferred that the SWFLS is positively associated with QOL, as several authors have reported (Holden & Hatcher, 2006; Noll, 2007; Shams, 2014; Sok, 2010). Men and women consider the same two types of resources as the most important. However, each group assigns a different importance of each perceived resource. Considering the sum of 22FPR as a whole, women assign greater relevance to the resources than men. This is consistent with the empirical evidence (Dean et al., 2008; Diener & Fujita, 1995; Lobos et al., 2017) in terms of the sum of resources as a whole being a strong predictor of QOL. According to our results, age and the variables related to the perceptions of economic situation, health, family and food significantly influence QOL. This implies that those men and women who have a more than adequate perceived SWES have a better self-perception of their physical and mental health, assign greater importance to family, are more satisfied with their food-related life and perceive more FPR have a better QOL than those who have an adequate or less than adequate perceived SWES, have a poor self-perception of their physical and mental health, assigned less importance to family, are less satisfied with their food-related life and feel they have a smaller number of FPR.

These results differ from those reported by Bourque et al. (2005), who indicated that the QOL of Canadian elderly men and women is not determined by similar domains. One explanation for this discrepancy is that in our study the participants are Ecuadorian elderly, and Ecuador is a developing country while Canada is developed. This may be explained by the fact that in our study the sample includes the elderly from a country with a lower level of development, where the living conditions of the elderly are more precarious and with less access to the number and quality of social services. This implies that the elderly tend to stay living together longer and coping with greater limitations than in countries with a higher level of development. A second aspect related to the sample considered in this study includes institutionalized elderly, i.e., people who share the same long-term residence.

The coefficient of the variable age suggests that men have a higher cognitive QOL than women as they age. Nevertheless, since the variable age-squared was significant, one minimum and maximum point was obtained for men and women, respectively. This means that men's QOL falls until 77 years and then begins to increase. In the case of the women, the QOL increases until 82 years and then their QOL begins the process of deterioration. This could be explained by the woman being responsible for the home, the raising of children, and the decisions on food consumption in the culture of less developed countries. This implies that a more active role is fulfilled by men and this does not finish when they reach 60 years of age. This would also explain FPR being more available to the women. Our results definitely suggest that cognitive deterioration begins later in women than in men, which is consistent with the dominant role of women at home throughout their life.

The magnitude of the estimated coefficients indicates that women's QOL is more sensitive to the changes in unhealthy days than is the case for men. This means that for women physical and mental health is a more limiting factor than for men. However, verifying the findings of Oshio (2012), our results confirm the greater sensitivity of QOL for men faced with changes in the importance of family. Finally, a larger stock of perceived resources has a greater impact on women's than men's QOL. Again, this is consistent with the fact that women feel they have a larger number of resources considered as a whole.

The importance of cost in food consumption reported by Dean et al. (2008) does not seem to be comparable to our results. This discrepancy may be explained by the lower standard of living observed in Ecuador compared to the eight European countries studied by the authors mentioned. According to 2015 figures from the World Bank, the gross domestic product (GDP) per capita in the eight European countries is 5.5 times the GDP per capita of Ecuador, which imposes a heavy budgetary restriction for food consumption on the elderly, including in our study.

In general, at correlational level the magnitude of the relationships between the SWLS, SWFLS and 22 FPR differs between men and women. In addition, on the level of cause and effect, gender also plays a relevant role that is reflected in the magnitude of the coefficients of the variables that are predictors of QOL. This occurs because men and women differ in aspects like age, perception of their economic situation and health, as the literature suggests (Akinyemi & Aransiola, 2010; De Santis et al., 2008; Fokkema & Liefbroer, 2008; Gaymu & Springer, 2012; Jamieson et al., 2009; Noh et al., 2015).

The findings of this study can serve to improve the design and implementation of public policies; for example, strengthening social services, improving health care, developing campaigns to provide information about the benefits and risks of the consumption of certain foods, in addition to raising awareness about the benefits associated with healthful lifestyles in relation to food.

The results of this study must be analyzed with caution given two limitations deriving from the nature of the sample and the selection of the participants. First, it was not possible to make deductions about the trends of the QOL dimensions in recent years. Second, the elderly institutionalized in retirement homes were interviewed preferentially; therefore, there could be considerable selection bias.

5 Conclusion

The main conclusion is that the SWFLS and FPR are strong predictors of QOL in the Ecuadorian elderly. However, gender plays a relevant role in the magnitude of the relationships. The sum of FPR is significantly associated with QOL; however, the relations between FPR and QOL are not significant when the FPR are considered individually. The sum of resources, together with the age, economic situation, health, family and food-related factors are significant predictors of QOL.

This finding has remarkable implications for the design of actions of public interest. This means that our results, in

their quality as subjective indicators (Veenhoven, 2008), could complement the design and implementation of public policies related to the QOL of men and women. In practice, this involves improving access to and quality of health care, designing strategies to strengthen family networks, promoting healthy eating habits and improving the availability of resources in relation to food for both men and women. More specifically, some examples that could contribute to this are access to lower costs for hospitalization for and convalescence from physical and mental diseases, or the adaptation of spaces that make it easier for the elderly to integrate and share. Finally, awareness campaigns would also help, through talks and courses that show the advantages of healthy eating among the older adult population.

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