ORIGINALES

Measuring the quality of life in institutionalized seniors in Lima (Peru)

Medición de la calidad de vida en adultos mayores institucionalizados de Lima (Perú)

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ABSTRACT:
Introduction: Older adults experience physical, cognitive, social, and emotional changes that impact their quality of life. It is therefore necessary to have instruments with appropriate measurement properties to identify and measure this variable, so that inferences or interpretations are valid for decision-making.
Objective: This study analyzes the measurement properties of the WHOQOL-OLD questionnaire for Peruvian institutionalized seniors.
Method: Participants included 300 adults over 65 years (M_{age}=78.41) institutionalized in a nursing home in the city of Lima, of which 173 (57.7%) were men and 127 (42.3%) were women. The internal structure of the WHOQOL-OLD was assessed through confirmatory factor analysis (CFA), whereas the convergent validity was analyzed using the Quality of Life Index (QLI). In addition, reliability scores were calculated and a scale for the study sample was obtained.
Results: The results show that the structure of the six factors involved in the WHOQOL-OLD is suitably adjusted to data (CFI = .97; TLI = .97; SRMR = .02; RMSEA = .06), with proper internal consistency (Cronbach's α ranging from .94 to .98). Likewise, it is possible to observe significant relationships with the autonomy (r_s = .13, p < .05) and social involvement (r_s = .16, p < .01) dimensions included in the QLI.
Conclusions: The WHOQOL-OLD Quality of Life Questionnaire has empirical evidence of validity and reliability that makes it an appropriate instrument to measure the quality of life variable.

Keywords: Seniors, Quality of life, WHOQOL-OLD questionnaire

RESUMEN:
Introducción: Los adultos mayores experimentan cambios a nivel físico, cognitivo, social y emocional que tienen un impacto en su calidad de vida. Por lo tanto, resulta necesario disponer de instrumentos con adecuadas propiedades de medición para identificar y medir esta variable, de modo que las inferencias o interpretaciones sean válidas para la toma de decisiones.
Objetivo: El objetivo del estudio fue analizar las propiedades de medición del cuestionario de calidad de vida WHOQOL-OLD en adultos mayores peruanos institucionalizados.

Método: Participaron 300 adultos mayores de 65 años (Medad=78.41) institucionalizados en un asilo de la ciudad de Lima, donde 173 (57.7%) fueron hombres y 127 (42.3%) fueron mujeres. Se analizó la estructura interna del WHOQOL-OLD a través del análisis factorial confirmatorio (AFC) y la validez convergente con el Índice de Calidad de Vida (ICV). Asimismo, se estimaron puntuaciones de fiabilidad y se obtuvo un baremo para la muestra de estudio.

Resultados: Los resultados indican que la estructura de seis factores del WHOQOL-OLD presenta un ajuste satisfactorio con los datos (CFI = .97; TLI = .97; SRMR = .02; RMSEA= .06) y una adecuada consistencia interna (alfa de Cronbach entre .94 y .98). Asimismo, se evidencian relaciones significativas con las dimensiones autonomía (r_s = .13, $p < .05$) y participación social del ICV (r_s = .16, $p < .01$).

Conclusiones: El cuestionario de calidad de vida WHOQOL-OLD cuenta con evidencias empíricas de validez y fiabilidad que lo sitúan como un instrumento adecuado para medir la variable de la calidad de vida.

Palabras clave: Adultos mayores, Calidad de vida, Cuestionario WHOQOL-OLD.

INTRODUCTION

In recent years, the senior population has increased worldwide due to the rise in the life expectancy and the decrease in fertility rate[1]. This is also the reality of Peru, which is estimated to represent 12% of the total population by 2025[2]. In old age, seniors experience different changes at the physical, cognitive, emotional, and social levels, which impact their life quality[3, 4]. In that regard, the World Health Organization (WHO)[1] defines quality of life as an individual's perception of their own existence within the culture and system of values of the place they live in and concerning their goals, expectations, standards, and concerns.

Evidence shows that seniors' quality of life is associated with variables concerning physical and psychological health. In this way, previous research studies report that perceived health[5] and cognitive functioning[6] influence the perception of quality of life, also showing a positive relationship between quality of life, wellbeing, and life satisfaction[7,8]. Furthermore, a good quality of life perception impacts their behavioral functioning, will to live, and successful aging[6,9].

As mentioned above, quality of life is a multidimensional concept that can be associated with different variables. In case of seniors, it is expected to be constructed in a favorable way, so they are capable of acknowledging and living their old age as a continuation stage that follows from a life process, rather than a phase involving functional decline and social isolation[10]. Positive bonds and factors, such as family and social context[4,11], are also key factors for the development of a suitable perception of quality of life. Nonetheless, in many situations, families cannot take care of seniors, which results in a high number of elderly persons living in nursing homes[12].

Taking into account the relevance of the quality of life as well as its association with seniors' physical and psychological health[5-9], having the appropriate instruments to measure it becomes necessary. They must demonstrate suitable measurement properties to ensure the validity of any interference or interpretation resulting from the scores, leading to solid decision-making for developing individual or group prevention and intervention activities.

To date, the interest in measuring quality of life has increased, and several instruments have been made available across healthcare[13]. Thus, the WHO has developed the World Health Organization Quality of Life-Old (WHOQOL-OLD), aimed

at learning about the condition of seniors' quality of life at the global level. Its original version is structured into six dimensions, which comprise 24 items, in addition to a reliability score of .89[14]. This instrument has been recently adapted to the reality of several Latin American countries such as Mexico, Ecuador, and Chile.

Its adaptation for Mexico showed an internal structure of six dimensions, reporting a Cronbach's alpha (α) reliability of .84[15]. Another study developed in Mexico featured a four-dimension structure and removed four of the original items, with a Cronbach's α reliability of .89 [16]. For its part, in Chile, this instrument assessed the internal structure of six dimensions and reported an .80-α [17]. In addition, Ecuador's internal structure featured four dimensions and obtained a .84-α [18].

Despite these efforts, it is necessary to keep on developing studies to adapt this instrument to other countries such as Peru. Therefore, this research analyzes the measurement properties of the WHOQOL-OLD quality of life questionnaire in a sample of institutionalized seniors in Lima.

METHOD

Given that the measurement properties of the WHOQOL-OLD [19] were assessed, an instrumental design was applied to this research.

Sample

The study population included 536 seniors institutionalized in a nursing home located in the city of Lima, ultimately selecting a sample made up of 300 seniors over 65 years (M_{age} = 78.41) who met the inclusion criteria of not suffering from prior cognitive impairment (either moderate or severe) or symptoms of depression. The participants were identified and selected from a database provided by the institution and developed on the basis of continuous cognitive and affective screening testing.

Of the total sample, 127 (42.3%) were men and 173 (57.7%) were women, with a minimum age of 65 and a maximum age of 96. As for their level of education, 24.3% completed primary school, while 17.7% did not; 33.7% of them finished high school, while 6.7% did not; and 13.7% of them graduated from college, whereas 4% reported having some higher education. With regard to their marital status, 14.3% are married, 13% are divorced, 57.3% are single, and 15.3% reported being widowed.

A non-probability purposive sampling was conducted to select participants. After following the inclusion criteria, a sample of 300 seniors was obtained. Bearing in mind that the study implemented the factor analysis technique, which usually recommends including at least 5 to 10 people for each item applied, the number of participants selected is adequate and fulfills this requirement[20].

INSTRUMENTS

WHOQOL-OLD Quality of Life Scale

The World Health Organization's Quality of Life of Older Adults (WHOQOL-OLD) scale was applied to measure quality of life. This research study used the questionnaire adapted for Mexico[15]. This scale comprises 24 Likert scale items divided into six 4-item dimensions: sensory skills (Ss), autonomy (Aut), past, present, and future

activities (Ppfa), social involvement (Si), death and despair (De), and intimacy (Int). Scores for each dimension may range from 4 to 20 points[14].

Quality of Life Index (QLI)

The QLI measures aspects of one's quality of life: psychological wellbeing, physical wellbeing, self-care, and independent functioning, occupational functioning, interpersonal functioning, emotional and social support, community support and support from services, personal fulfillment, spiritual satisfaction, and an overall assessment of quality of life. Each of these aspects includes 10 items, which are assessed on an ordinal scale from 1 to 10 points. This instrument has been validated for use with the Peruvian population, reporting an α value of .87[21].

Procedure

The research protocol was approved by the Universidad Peruana de Ciencias Aplicadas' Ethics Committee. After that, the authors' authorization was requested to use the test adapted for Mexico[15]. In turn, a bibliographic review of the instruments used to measure the quality of life of seniors was conducted, and an instrument was chosen to assess the convergent validity, followed by the arrangements for the project submission and the request to collect data from a nursing home in Lima. After obtaining said authorization, both instruments were applied. At this stage of the study, the participants were provided with an informed consent in advance.

First, the data collection process involved a pilot test made up of 27 seniors. This activity identified the presence of difficulties in understanding the items or instructions of each test in particular. Instruments were individually applied, reading each question and the answer options, and modulating the tone of voice based on each participant's characteristics.

The IBM SPSS program (v.25) was used to assess the test data. First, descriptive and homogeneity analyses were carried out to identify the response distribution, in addition to demonstrating the total correlation of elements. Next, the confirmatory factor analysis was conducted to compare the models and their goodness of fit indices, thus providing the internal structure information. After that, the reliability scores were analyzed, calculating the alpha and omega coefficients. The alpha coefficient was used to compare reliability scores with those reported by previous studies, whereas the omega coefficient was implemented as was suggested for the development of factor studies[22].

The research project was approved in March 2019 and implemented in May of the same year. Data was gathered in May and June of 2019, and the database was developed from June to December, leading to the development of screening processes. Finally, the final research report was drafted for January to March 2020.

RESULTS

Descriptive analyses and homogentity of items

A descriptive analysis of the items shows a tendency of answers with average values, as the items' means ranged between 2.43 and 4.04, keeping in mind that the scale's response values range from 1 to 5. After evaluating the asymmetry and kurtosis, items

are close to normal distribution, with no excess asymmetry, as no item is over 1.5[23]. It has also been noted that most items show an appropriate homogeneity level, as they meet the criteria of having corrected item-test correlations (r_{itc}) over .20 and being positive[20]. However, item 20 does not fulfill the homogeneity criteria, so it was removed.

Table 1. WHOQOL-OLD's descriptive statistics and corrected item-test correlations

Item	M	SD	g1	g2	r_{itc}
1	3.62	0.94	0.082	-0.99	0.81
2	3.59	1.26	-0.147	-1.4	0.82
3	3.01	1	0.327	-0.07	0.89
4	2.6	1.03	-0.197	-0.58	0.88
5	2.79	0.8	-0.004	-0.73	0.87
6	3.65	0.97	-0.195	-0.18	0.86
7	3.9	0.94	-0.138	-1.27	0.91
8	4.04	0.91	-0.491	-0.8	0.9
9	3.92	1.09	-0.509	-1.11	0.87
10	3.82	1.01	-0.273	-1.1	0.79
11	2.82	0.9	-0.067	-0.28	0.92
12	2.92	1.09	-0.046	-0.7	0.87
13	3.27	1.07	-0.309	-0.51	0.86
14	2.64	1	0.171	-0.47	0.83
15	3.72	0.78	-0.643	0.21	0.82
16	3.35	0.96	-0.698	-0.24	0.93
17	3.29	0.96	-0.594	-0.83	0.9
18	3.45	0.95	-0.463	-0.35	0.91
19	3.52	0.84	-0.393	-0.54	0.9
20	3.27	0.84	-0.272	0.74	-0.65
21	2.72	1.05	0.045	-0.37	0.9
22	2.66	1.12	0.279	-0.39	0.94
23	2.62	1.26	0.255	-1.02	0.93
24	2.43	1.29	0.493	-0.87	0.93

Note: M = mean; SD = standard deviation; g1= asymmetry; g2 = kurtosis; r_{itc} = Item-test correlation

Validity analysis based on internal structure

After removing item 20, the WHOQOL-OLD's six-factor model is satisfactory fit[24]($\chi 2$ = 435; CFI = .97; TLI = .97; SRMR = .024; RMSEA = .06). Table 2 shows the factor loadings pattern of the scale without including item 20. The social skills dimension has factor loadings with values ranging from .92 and .95, while the factor loadings for the autonomy dimension are between .90 and .96. The factor loadings concerning the dimension of present, past, and future activities range between .85 and .94 and, in case of social involvement, they range between .84 and .97. The death and despair dimension has factor loadings of .89 and .94, while the intimacy dimension's factor

loadings are between .92 and .96. Therefore, it can be confirmed that the items of all dimensions have suitable factor loadings, as they exceed the value of .30[20].

Table 2. WHOQOL-OLD's factor patterns with standardized loadings

Item	Factor					
	Ss	Aut	Ppfa	Si	De	Int
1	.92					
2	.95					
10	.92					
3		.92				
4		.90				
5		.90				
11		.96				
12			.91			
13			.90			
15			.85			
19			.94			
14				.84		
16				.97		
17				.94		
18				.93		
6					.89	
7					.94	
8					.93	
9					.90	
21						.92
22						.96
23						.96
24						.95

Note: Ss = Sensory skills, Aut = Autonomy, Ppfa = Past, present and future activities, SI = Social involvement, Da = Death and despair, Int = Intimacy

Validity evidence based on the relationship with other variables

The normality of the scores of each dimension included in the WHOQOL-OLD and QLI was assessed through the Kolmogorov-Smirnov test, obtaining scores lower than 0.5. It is therefore concluded that there is normal distribution, thus proceeding to conduct the convergent validity analysis using Spearman's correlation coefficient (rho).

As for convergent validity, the WHOQOL-OLD's autonomy (r_s = .13, p < .05) and social involvement (r_s = .16, p < .01) dimensions are positively and significantly associated with the QLI. No relevant association was found for the remaining dimensions. With regard to intra-dimensional relationships, no significant relationships are present in most of them (except two) (see Table 3).

Table 3. Correlation coefficient between WHOQOL-OLD and QLI dimensions

Variables	1	2	3	4	5	6	7
1. Ss	1						
2. Aut	-0.06	1					
3. Ppfa	0.02	-0.01	1				
4. Si	0.05	-0.05	.13*	1			
5. De	-0.01	-0.11	-0.07	-0.07	1		
6. Int	0.05	.13*	0.03	-0.02	0.07	1	
7. QLI	0.05	.13*	0.1	.16**	-0.03	0.04	1

Note: Ss = Sensory skills, Aut = Autonomy, Ppfa = Past, present and future activities, Si = Social involvement, Da = Death and despair, Int = Intimacy.
*p < .05,**p < .01

Internal consistency reliability assessment

The Cronbach's alpha (α) and omega (ω) coefficients were calculated, obtaining the following values for each dimension: Sensory skills (α = .94; ω= .96), autonomy (α = .95; ω= .96), past, present and future activities (α = .94; ω= .94), social involvement (α = .96; ω= .96), death and despair (α = .95; ω= .95), intimacy (α = .97; ω= .97). As can be noted, all values are over .70, thus showing high reliability.

DISCUSSION

This research aimed to assess the measuring properties of the WHOQOL-OLD Quality of Life Scale for seniors institutionalized in a nursing home in Lima, Peru. Results show that this instrument is structured into 6 factors, and had convergent validity with another life quality measurement, in addition to its high reliability. Thus, it is considered a suitable instrument to measure Peruvian seniors' quality of life.

The results obtained resemble those reported by Acosta et al.[15], as they show a similar internal structure and an extremely high reliability. Pursuant to the relationship with other variables, the abovementioned study found convergent validity with the scores of a depression scale, and convergent validity with the scores of a subjective wellbeing scale, reporting high correlations. This could not be observed in this study, in which partial correlations were noted between the WHOQOL-OLD and the QLI dimensions. Therefore, further research should include depression and subjective wellbeing measurements in the WHOQOL-OLD validation process.

In addition, Hernández et al.[16] and Ortega et al.[18] found internal structures that differed from the original one and from that observed in this research. However, it is in line with the high reliability findings. In turn, Urzúa and Navarrete[17] report a one-dimensional internal structure including 6 items and moderate reliability, as a consequence of their assessment of an abbreviated version of the WHOQOL-OLD. Even though a shortened version may ease the application time of the test, future studies should seek to assess the validity and reliability of this potential abbreviated version.

This research has the following limitations: a) the generalization of results and b) the instrument used for convergent validity. As for generalization, the results of this research proved to be inconclusive, as it implemented non-probability sampling. Therefore, the use of probability sampling would be highly recommended in future studies.

With regard to the second limitation, the instrument used for convergent validity was the QLI, which did not have the same number of dimensions as the WHOQOL-OLD questionnaire. This made it difficult to carry out the analysis procedure and find significant correlations between both instruments. Further research should take into account the internal structure of the instruments used to assess the evidence of convergent or divergent validity. Based on the findings by Acosta et al.[15], an option would involve analyzing the WHOQOL-OLD's convergence with depression and subjective wellbeing measures.

Given the availability of an instrument that has demonstrated having the capacity to measure quality of life among institutionalized senior adults, it could be implemented in the context of professional and research activities. In the professional environment, its use may help identify adults based on their quality of life, thus facilitating decision-making for the development of individual and group interventions. For its part, the research area may implement this instrument to assess the effectiveness of intervention programs that work with the quality of life variable, as well as in the development of other types of studies that take this variable into account.

CONCLUSIONS

The WHOQOL-OLD is determined to measure the quality of life of senior adults institutionalized in a nursing home in the city of Lima, thus making available an instrument whose inferences and interpretations conducted based on its scores have proven to be valid. In addition, it may help make decisions concerning the quality of life-related group or individual promotion or intervention activities in the healthcare field.

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Annex A

WHOQOL-OLD QUESTIONNAIRE

Instructions: The following questions relate to the degree to which you have experienced certain events in the past two weeks. Please answer them only considering your life over the last two weeks. Mark the most suitable answer to each question with an "X."

1. To what extent do problems with your vision, hearing, taste, smell, and touch affect your daily life?

Not at all   A bit   Average   Quite a bit   A lot
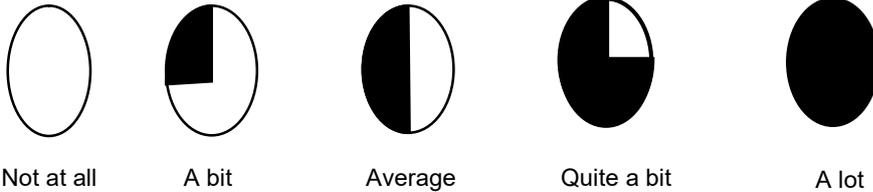
2. To what extent does your loss of vision, hearing, taste, smell or touch impact your ability to engage in different activities?

Not at all   A bit   Average   Quite a bit   A lot
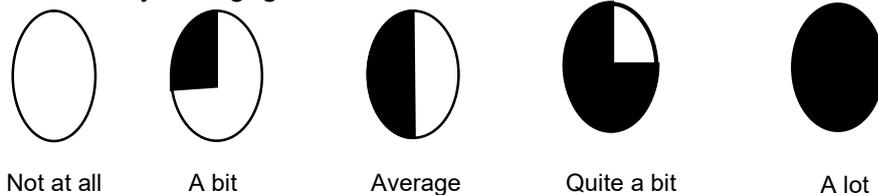
3. How free are you to make your own choices?

Not at all   A bit   Average   Quite a bit   A lot
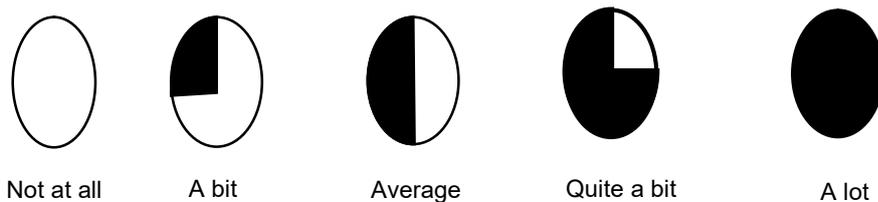
4. To what extent do you feel you have control over your future?

Not at all   A bit   Average   Quite a bit   A lot
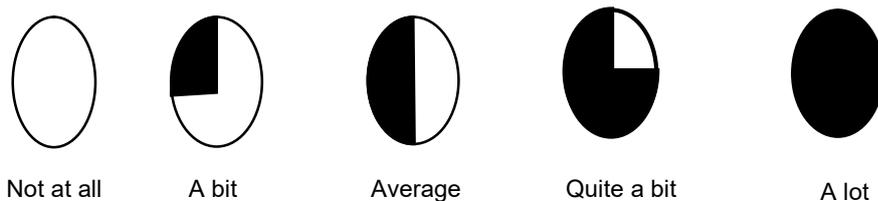
5. To what extent do you think the people surrounding you respect your freedom?
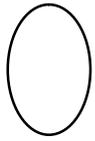
| Not at all | A bit | Average | Quite a bit | A lot |

6. How concerned are you about the way you will die?
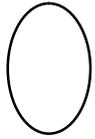
| Not at all | A bit | Average | Quite a bit | A lot |

7. How afraid are you about not being able to control your death?
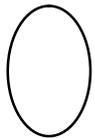
| Not at all | A bit | Average | Quite a bit | A lot |

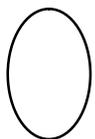8. What is your level of fear of death?
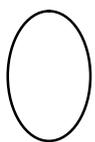
| Not at all | A bit | Average | Quite a bit | A lot |

9. How much do you fear having a painful death?

| Not at all | A bit | Average | Quite a bit | A lot |

The following questions relate to the degree to which you experienced or were able to do certain activities in the past two weeks, such as going out as much as you wanted.

10. To what extent do your problems of vision, hearing, taste, smell and touch affect your ability to relate to others?
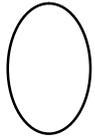
Not at all	A bit	Average	Quite a bit	A lot

11. To what extent are you capable of doing anything you would like to do?
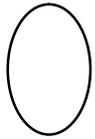
Not at all	A bit	Average	Quite a bit	A lot

12. How satisfied are you with the opportunities of continuing to accomplish things in your life?
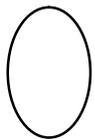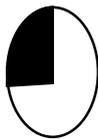
Not at all	A bit	Average	Quite a bit	A lot

13. To what extent do you believe you have been recognized as deserved in your life?
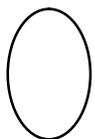
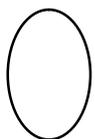| Not at all	A bit	Average	Quite a bit	A lot

14. To what extent do you feel you have different activities to do every day?

Not at all	A bit	Average	Quite a bit	A lot

The following questions relate to how satisfied or happy you are with regard to various aspects of your life in the last two weeks (i.e., your community participation or your life achievements):

15. How satisfied are you with your life accomplishments?

Very dissatisfied   Dissatisfied   Neither satisfied nor dissatisfied   Satisfied   Very satisfied

16. What is your level of satisfaction concerning the way you spend your time?

Very dissatisfied   Dissatisfied   Neither satisfied nor dissatisfied   Satisfied   Very satisfied

17. How satisfied are you with your activity level?

Very dissatisfied   Dissatisfied   Neither satisfied nor dissatisfied   Satisfied   Very satisfied

18. To what extent are you satisfied with the opportunities you have to engage in community activities?

Very dissatisfied   Dissatisfied   Neither satisfied nor dissatisfied   Satisfied   Very satisfied

19. How happy are you with the things that interest you?

Very unhappy   Unhappy   Neither happy nor unhappy   Happy   Very happy

20. How would you rate the functioning of your senses (vision, hearing, taste, smell and touch)?
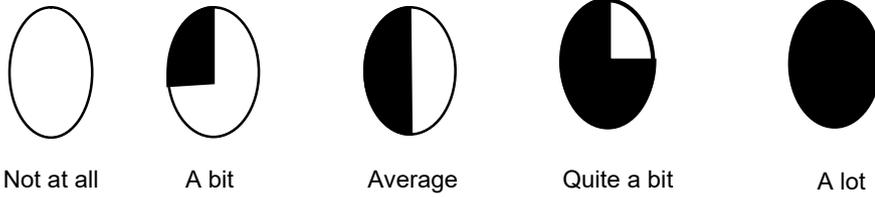
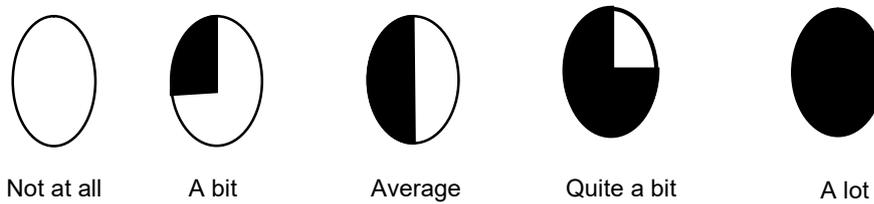Very poor   Poor   Average   Good   Very good

The following questions relate to any intimate relationship you may have. Please consider any partner or individual you may be closely related to, a more intimate relationship than with any other person in your life.
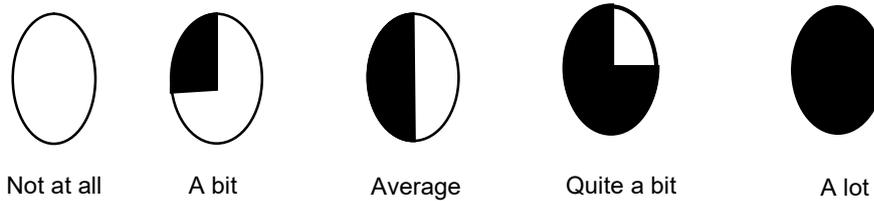
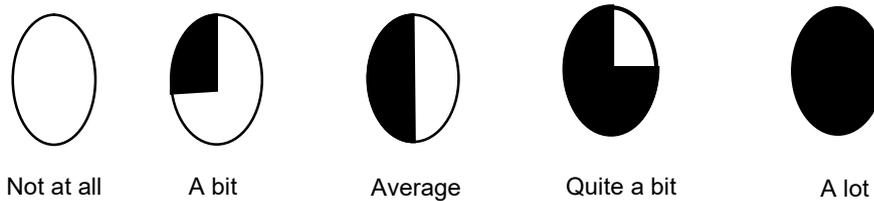21. To what extent do you feel you are accompanied in life?

Not at all   A bit   Average   Quite a bit   A lot

22. How much love do you feel in your life?

Not at all   A bit   Average   Quite a bit   A lot

23. To what extent do you have the opportunity to love others?

Not at all   A bit   Average   Quite a bit   A lot

24. To what extent do you feel you are loved?

Not at all   A bit   Average   Quite a bit   A lot