

REVISTA

PERSPECTIVAS

UFPS

Original Article

<https://doi.org/10.22463/25909215.4265>

Analysis of the comprehension of the instrument for measuring Social Determinants of Health

Análisis de comprensión del instrumento para la medición de determinantes Sociales de la Salud

Diana Paola Betancurth-Loaiza^{1*}, Consuelo Vélez-Álvarez², Natalia Sánchez-Palacio³

¹PhD. Salud Pública, diana.betancurth@ucaldas.edu.co, ORCID: <https://orcid.org/0000-0001-7620-2336>, Universidad de Caldas, Manizales, Colombia

²PhD. Salud Pública, consuelo.velez@ucaldas.edu.co, ORCID: <https://orcid.org/0000-0001-7274-7304>, Universidad de Caldas, Manizales, Colombia

³Magíster en Salud Pública, natalia.sanchez@ucaldas.edu.co, ORCID: <https://orcid.org/0000-0002-3405-5144>, Universidad de Caldas, Manizales, Colombia

How to cite: Betancurth-Loaiza, D.P., Vélez-Álvarez, C., y Sanchez-Palacio, N. (2023). “Análisis de comprensión del instrumento para la medición de Determinantes Sociales de la Salud.”. *Perspectivas*, vol. 8, no. 2, pp. 36-48, 2023. <https://doi.org/10.22463/25909215.4265>

Received: Marzo 9,2023; Approved: Junio 20,2023.

ABSTRACT

Keywords:

Comprehension,
Social Context, Social
Determinants Of Health,
Validation Study, Public
Health.

The objective of this study was to analyze the understanding of the items that make up the Instrument for the Measurement of the Social Determinants of Health (DESOSA81) in a pilot population with diverse characteristics. The research method used was qualitative with an interpretive approach. Cognitive interviews were conducted with 5 groups selected by convenience, using the CASM (Cognitive Aspects of Survey Methodology) cognitive pretest method as a reference. The collected data were organized in an Excel matrix for further analysis.

The results were obtained through cognitive interviews conducted in successive groups of 10 people, with the purpose of evaluating the level of understanding of the DESOSA81 instrument. Aspects of clarity, relevance and vocabulary were examined for each question. In total, recommendations were made to improve 34 questions; 19 of them presented comprehension difficulties, 24 were questioned in terms of their relevance and 14 in relation to their vocabulary. These difficulties were categorized using the question-answer cognitive process guide. In addition, they were used to develop generic questions to enable the international application of the instrument. The research team analyzed, discussed and improved the items of the tool based on these recommendations.

In conclusion, the instrument comprehension tests contributed to improving the clarity and coherence of the questions. Participants provided valuable insights based on their contexts, education levels and professions, which facilitated the creation of a more effective generic instrument.

RESUMEN

Palabras clave:

Comprensión, Contexto
Social, Determinantes
Sociales De La Salud,
Estudio De Validación,
Salud Pública..

Este estudio tuvo como objetivo analizar la comprensión de los ítems que conforman el Instrumento para la medición de los Determinantes Sociales de la Salud (DESOSA81) en una población piloto con diversas características. El método de investigación utilizado fue cualitativo con un enfoque interpretativo. Se llevaron a cabo entrevistas cognitivas con 5 grupos seleccionados por conveniencia, utilizando el método de pretest cognitivo CASM (Aspectos Cognitivos de la Metodología de Encuestas) como referencia. Los datos recopilados se organizaron en una matriz de Excel para su posterior análisis.

Los resultados se obtuvieron a través de entrevistas cognitivas realizadas en grupos sucesivos de 10 personas, con el propósito de evaluar el nivel de comprensión del instrumento DESOSA81. Se examinaron aspectos de claridad, relevancia y vocabulario en cada pregunta. En total, se hicieron recomendaciones para mejorar 34 preguntas; 19 de ellas presentaron dificultades de comprensión, 24 fueron cuestionadas en cuanto a su relevancia y 14 en relación con su vocabulario. Estas dificultades se categorizaron utilizando la guía del proceso cognitivo de pregunta-respuesta. Además, se utilizaron para elaborar preguntas genéricas que permitieran la aplicación internacional del instrumento. El equipo investigador analizó, discutió y mejoró los ítems de la herramienta en función de estas recomendaciones.

En conclusión, las pruebas de comprensión del instrumento contribuyeron a mejorar la claridad y coherencia de las preguntas. Los participantes aportaron valiosos insights basados en sus contextos, niveles de educación y profesiones, lo que facilitó la creación de un instrumento genérico más efectivo.

*Corresponding author.

E-mail address: diana.betancurth@ucaldas.edu.co (Diana Paola Betancurth Loaiza)



Peer review is the responsibility of the Universidad Francisco de Paula Santander.
This is an article under the license CC BY 4.0

Introduction

Social, cultural, economic and political inequalities are those that, to a large extent, generate imbalances in the good life of people. Likewise, these dissimilarities immerse the population in various circumstances that imply health inequalities, limited opportunities to access education, low income, among other indicators. All of the above is created by depriving society of human development that leads to the common good and not just that of a few (Marmot & Bell, 2012); For this reason, the rigorous measurement of aspects related to the Social Determinants of Health (SDH) becomes relevant, since its analysis emerges as a new way of seeing, understanding and explaining health inequities.

The measurement and study of DSS has been implemented in low and middle-income countries in various scenarios through inequalities and DSS observatories (Krause & Ballesteros, 2018; Martín Hernández, et al. 2020). In the case of Chile, surveys have been carried out such as the CASEN 2015 and the National Health Survey 2009 (Undersecretariat of Public Health of Chile, 2018), at the level of Portugal the European Deprivation Index under the Townsend theorization (Ribeiro, et al. 2017). On the other hand, Brazil carried out the study with data from the demographic census of the Brazilian Institute of Geography and Statistics (IBGE) (Moura de Gois, et al. 2020) and Colombia used the ASIS Health Situation Analysis (Ministerio de Salud y Protección Social, 2015).

On the other hand, the instrument for Social Determinants of Health (DESOSA81) contributes to the design and validation of an instrument on DSS, which responds to criteria of writing, grammar, cohesion and coherence through its operational concepts - recognized as dimensions - and the items, which allow obtaining evidence for the measurement of the DSS (Holguín Zuluaga, 2022).

In recent years, comprehension tests such as the cognitive interview (CE) have been used

more frequently in the design and validation of questionnaires. This test is a qualitative research method that allows improving validity in quantitative analyses. Thus, cognitive psychology and survey methodology are combined. In this way, the value of the proposal presented lies in the possibility of identifying deficiencies or absences in the questions that lead to response errors (Caicedo Cavagnis & Zalazar Jaime, 2018).

Studies such as the one carried out by Berra et al. (2021) demonstrate the importance of using comprehension tests in the design and validation of questionnaires, given that it allows for acceptable and equivalent instruments in relation to terminology and linguistics, which allows it to be used in various contexts. Likewise, Torquemada and Loredó (2021) state that cognitive interviews strengthen the understanding of the question and the response process, thus reinforcing the retrieval of relevant information and decision-making about changes in wording, lexicon. and relevance of the questions, as well as their congruence within the corresponding field.

However, the majority of studies carried out to measure DSS have been based on more theoretical than practical experiences, consequently, the possible social stratifiers have been presented in a fragmented way, showing little research that expressly associates the social context, the health and the implementation of instruments for its measurement. Likewise, there is little evidence of the application of comprehension tests in the community that determine the degree of understanding and satisfaction regarding items, descriptors and resolution time that make up the measurement instruments (Barboza-Solís, et al, 2020; Schülter Buss Heidemann, 2020; Holguín Zuluaga, et al., 2022).

In relation to the above, it is necessary to incorporate, in the instrument design process, the use of tools such as the cognitive interview, because it allows detecting errors of understanding that refer to the divergence between the true value of the item,

the information that is desired to be obtained and the responses collected from the participants (Martín & González Rábago, 2019). For this reason, this article presents the process of applying the described methodology to analyze the understanding of the items that make up *the Instrument for measuring the Social Determinants of Health* (DESOSA81) in a pilot population with different characteristics.

Materials and Methods

A qualitative investigation was carried out with an interpretive approach, which gave meaning to the information collected. Thus, the point of view of the evaluated person was considered (Moral Santaella, 2006), from which the level of understanding of the instrument for measuring the Social Determinants of Health (DESOSA81) in diverse populations of the Colombian territory was determined.

The DESOSA 81 is a generic instrument that consists of 81 items applied by a trained interviewer in order to evaluate the Social Determinants of Health. Its structure consists of 7 general and 30 specific dimensions for the assessment of 19 structural and 62 intermediate determinants, it is composed of closed, open, dichotomous, Likert-type and mixed questions. It has a content validity index of 0.909 and an internal consistency according to Cronbach's Alpha coefficient of 0.952 (Holguín Zuluaga, 2022).

To carry out the comprehension tests, cognitive interviews were carried out in the different established groups: *teachers, students, social leaders, women and experts in the Primary Health Care (PHC) strategy*. This methodology was defined according to Armengol (Armengol Castells, 2007) as a technique that implies that the interviewees think out loud while carrying out the requested activity, thus the technique allows estimating the understanding of the questions, as long as the items in the instrument contain the desired information. Likewise, it becomes necessary to assess whether the interviewee understands the question consistently, with the aim of delving deeper and discerning the

possible interpretations given to each statement. (Caicedo Cavagnis & Zalazar Jaime, 2018; Holguín Zuluaga, 2022; Espinoza Freire, 2020).

For the above, their educational level, profession, interest in social participation and knowledge and lack of knowledge about the topic in question were taken into account. The process was carried out through both virtual and in-person mediations and the participants were selected at their convenience (Hernández & Carpio, 2019). The sample we worked with included an adult population, with different sociodemographic profiles and a willingness to participate.

For this, the cognitive pretest method CASM, -cognitive aspects of Survey Methodology- (Jabine, et al. 1984) was taken as a reference, which assumes that the answer to the questions of a questionnaire is not a simple sequence, but rather which requires a series of complex cognitive processes, which, without being linear, interweave the interpretation and understanding of the question, information retrieval and judgment. Thus, according to the authors, it is decided how to respond to, finally, select the option that correctly adapts to the response generated by the respondent.

Characterization of the participants:

-Teachers: age ranged between 33 and 60 years, for an average of 51 years. The female sex predominated among the participants with a representation of 75%. On the other hand, the socioeconomic stratum fluctuated between medium and high categories (strata 3 and 6), 50% of the participants played their role in higher education institutions, while the remainder in primary and secondary basic education institutions; At the time of the interviews, 3 of the 4 teachers were working. Regarding affiliation to the General Social Security System in Health and marital status, 100% belonged to the contributory regime and were married.

- **Students:** age ranged between 20 and 22 years, with an average of 20.75 years, 75% were women. 100% were enrolled in a public university in their fourth academic semester. The socioeconomic stratum fluctuated between low and medium (strata 1, 2 and 3) and all participants stated that they were not currently working. Regarding affiliation to the General Social Security Health System, 50% belonged to the contributory regime, 25% to the subsidized regime and, finally, 25% as beneficiaries; Regarding marital status, 100% reported being single.

- **APS Group:** age ranged between 24 and 69 years, with an average of 46.75 years. The female sex predominated among the participants with a representation of 75%. In relation to the socioeconomic stratum, the interviewees were between low, medium and high (strata 2, 3 and 6), 50% reported being currently working in law enforcement institutions. Compared to affiliation with the General Social Security Health System, 100% belonged to the contributory regime; Regarding marital status, 50% stated that they were married, 25% in a common law union, and 25% were single.

- **Social leaders:** age ranged between 47 and 62 years, with an average of 52.25 years; In relation to sex, 50% of those interviewed were men and 50% women. The socioeconomic stratum fluctuated between low and medium (strata 1, 2 and 3). Likewise, 100% of the participants reported not being currently working; However, they stated that they carried out activities for the community that did not generate any financial remuneration. In relation to affiliation to the General Social Security Health System and marital status, 100% reported belonging to the contributory regime and being married.

- **Women:** this population was defined by the researcher as not belonging to any specific group, their ages ranged between 21 and 76 years, with an average of 43 years. The participants lived in stratum 2 and 3, 100% of them were not working at the time of the interview, 50% were pursuing technology

and undergraduate studies in public institutions. Compared to affiliation with the General Social Security Health System, 100% belonged to the subsidized regime; Regarding marital status, 25% stated that they were married, 25% were widowed and the remaining 50% were single.

Procedure:

For the cognitive interviews, both closed questions (numerical qualification of the categories) and open questions were used. The former were easy to code, examine, took little time to answer and did not give rise to ambiguities. As a disadvantage, a possible limitation in the sample responses. On the other hand, the latter provided broader information, they were used to deepen opinions or reasons for behavior (Willis, 2012).

It should be noted that cognitive interviews were carried out in successive groups of 10 adults residing in the region and of different educational, socioeconomic and stratum levels. For this, the Think-aloud interview technique was applied, which originates from the approaches of Ericsson in 1980 and Loftus in 1984, to describe a specific type of activity, in which individuals receive the instruction explicit “think aloud” as they answer the questions on the provided instrument.

Likewise, all those profiles of people to be surveyed who, due to their sociodemographic, social, educational and professional characteristics, could strengthen the instrument by scoring three categories were taken into account: clarity, relevance and vocabulary (see figure 1). Additionally, the level of importance and appropriateness of the words used in the questions was investigated.

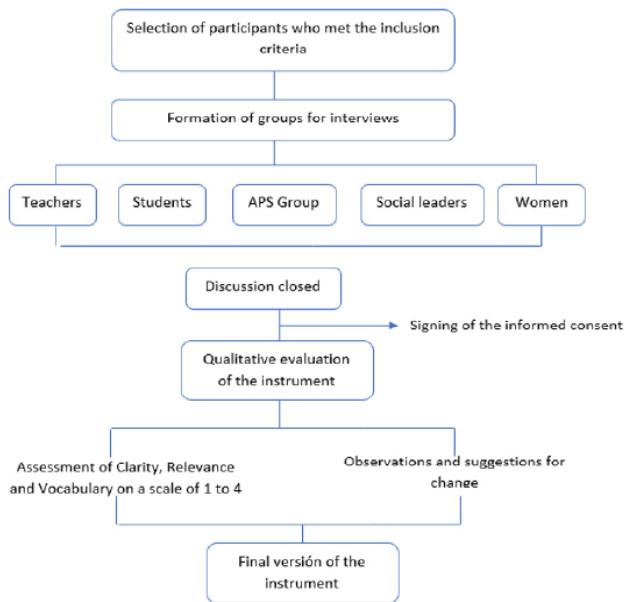


Figure 1. Cognitive interview procedure.

At first, the questions were asked to a single group, so the interviewer interacted with the respondents to assess how they understood each item and how they stated the answer. Subsequently, the described elements were reviewed and adjusted until a high level of understanding was achieved. Most of the interviews were carried out virtually due to the contingency generated by the Covid-19 pandemic, others took place in the usual home of the person interviewed; with a duration of approximately one and a half hours. All participants were asked for informed consent and permission to handle the information through a standardized document; the above in order to respect your anonymity.

As a next step, the group members were asked to rate each item in the categories CLARITY (level of understanding of the question), RELEVANCE (degree of importance of the question) and VOCABULARY (level of appropriation of the words) in a scale of four: 1, does not meet the criterion; 2, low level; 3, moderate level and 4, high level. At the end of the cognitive interviews, the information collected was consolidated in an Excel matrix that allowed a qualitative analysis to be carried out question by

question. The above with the purpose of identifying those in which at least one person had given a rating less than or equal to two, a lower degree of importance or disagreed with the terminology used or wording of the items. Once specified, the questions or parts of the questionnaire with evidence of difficulty were presented and analyzed by the research team, with the aim of making the respective modification proposals. The questions were considered clear if they did not demonstrate difficulty in understanding by any person interviewed.

For the development of the research, the ethical parameters of Resolution 8430 of 1993 (Ministry of Health of Colombia, 1993) were followed, as well as the international regulations of the Declaration of Helsinki (World Medical Association, 1968). Ethical approval was also obtained from the Faculty of Health Sciences of the University of Caldas (Minute 001 of February 17, 2021). For this reason, it is considered a risk-free investigation, given that it was based on the analysis of social characteristics, which did not affect the participants.

Results

Using this tool, we sought to investigate the degree of understanding of the DESOSA81 instrument by the interviewees. The aforementioned regarding the categories clarity, relevance and vocabulary, that is, level of understanding of the question, degree of importance of the question and level of appropriation of the words respectively. Likewise, the participants were asked whether they considered the item in question important or not and the appropriateness of the vocabulary used.

After analyzing the results of the cognitive interviews carried out with successive groups of 10 people selected by non-probabilistic convenience sampling, a total of 34 questions were identified with potential recommendations in some part of them (never in the entire question), 19 of them. These had comprehension difficulties, 24 were questioned about the relevance and 14 about the vocabulary

used. It is important to mention that all the interviews were classified following the phases of the question-answer cognitive process and were the basis for the research group to subsequently discuss and define improvements in the items of the instrument.

To present the results of the qualitative assessment of understanding, the question-answer process contemplated in the CASM was followed (see Table I):

Table I. General result qualification cognitive interview guide

DIMENSIONS			
SCALE	CLARITY	RELEVANCE	VOCABULARY
1-No meets the criteria.	n= 2 (0,5%)	n= 3 (0,75%)	n= 1 (0,25%)
2-Low level	n= 24 (6%)	n= 32 (8%)	n= 19 (4,75%)
3- Moderate level	n= 56 (14%)	n= 80 (20%)	n= 45 (11,25%)
4- High level	n= 318 (79,5%)	n= 285 (71,25%)	n= 335 (83,25%)
TOTAL*	400 (100%)	400 (100%)	400 (100%)

* For the total, 400 responses corresponding to 80 questions in 5 groups were taken into account.

1. *Problems of interpretation and/or understanding (clarity)*: in this category, 79.5% of the items were classified as high level, 14% as moderate level, while 6.5% were classified as high level. low. In this sense, difficulties were identified in a total of 19 questions in aspects related to sociodemographic characteristics, educational level, occupation and economic income, physical environment and infrastructure, health system/general health and state provision and way of life.

Concepts such as *ethnic group, migrant population, socioeconomic stratum, special groups, level of schooling achieved, time spent sitting during the week, origin of food*, as well as the discussion regarding current employment situation and consumption of psychoactive substances (SPA), or the identification of the terms type and modality of housing and health service in the home, gave rise to difficulties and differences in the understanding of the questions by some of the people interviewed.

In this regard, respondents noted observations regarding the *ethnic group* questions where they recommended using “belong” instead of “identify” according to the different contexts. Likewise, in those of *migrant population, socioeconomic stratum, type and modality of housing*, they suggested clarifying the concepts of nationality, stratum, type and modality. Similarly, in those of *special groups, current employment situation, health service in the home and consumption of psychoactive substances (SPA)* they recommended making known which ones are referred to. Likewise, in the level of schooling achieved, it was suggested to define “highest educational level.” On the other hand, the question that asks about the time spent sitting during the week was confusing for two of the interviewees, as was the *origin of the food* for one. Finally, regarding the question regarding the city or municipality of residence, it was suggested that it be more generic.

2. *Information retrieval (relevance)*: this category was rated as high level in 71.2% of the items, 20% as moderate level and 8% as low level. Thus, some drawbacks were recognized in aspects of precision in transportation, health care, emotional health and health conditions, physical activity, consumption of psychoactive substances (SPA), integration, age, origin and ethnicity, socioeconomic stratum, sex, source/ income level, social networks/ connection, employment status/occupation, housing and residential security, public services, gender and barriers to access to education.

In relation to this category, the respondents noted observations such as the following:

- Regarding *transportation*, they recommended simplifying “is access to transportation difficult?”
- Regular *health professionals considered* that not everyone has the ability to access a professional.
- Regarding *emotional health and health conditions*, they affirm that it is an a priori assessment

to investigate the health condition in general and that it should be expanded with the word sad.

- Regarding *aspects of vigorous and moderate physical activity and sitting in a day*, one interviewee had an ambiguous assessment, classifying them as not very relevant, but considered in the comments that they were important.

- Regarding the *consumption of psychoactive substances (PAS)*, they recommended being specific when naming them.

- Religious or *spiritual services* were considered not very relevant due to issues of freedom of belief.

- Attendance *at meetings or social clubs* is recommended according to the population targeted by the instrument.

- They *believed that community work* is very global and not very relevant.

- From the *ethnic group*, they recommended addressing it so that it is better understood.

Some interviewees considered the questions referring to the following items to be of little relevance, without clear support: *socioeconomic stratum, sex, source/level of income, household equipment, barriers to access to education, work situation/occupation and use of the health service, urgency*. Similarly, one participant stated that one should not inquire about work aspects of the past. On the *other hand, the question about suspension of public services* was described by another interviewee as irrelevant, given that he considers it a widespread problem. Finally, in reference to gender, he recommended not asking this question due to privacy issues.

3. *Judgment and selection:* (vocabulary): 83.75% of the items were classified as high level, 11% as moderate level, while 5% were classified as low level, in this section the researchers took

into account vocabulary aspects that influenced the response decision of the respondents. Likewise, it was observed that the level of appropriation of the words was rated by some interviewees as low in relation to the dimensions of age, origin and ethnicity, socioeconomic stratum, special groups, transportation and mobilization, consumption of psychoactive substances (SPA), housing and residential security, health care and food.

Regarding this category, the participants recorded different suggestions about not asking: *how old they are, but how old they are*; what ethnic group you identify with, but what ethnic group you belong to; *what is their socioeconomic stratum, but what is their socioeconomic level*; Do you belong to any of the following groups with differential focus, but to which special group do you belong? The transportation system that you usually use has prevented you from attending medical appointments, meetings, work or getting things necessary for daily life, otherwise access to transportation is difficult. Finally, they suggested changing cannabis for marijuana.

Likewise, it was advised to modify the way of asking from *Which to How* in the question about water quality and use the term *suspended* instead of notified in relation to *public services*. They also found the structure of the question about the number of meals per day redundant.

Finally, respondents rated the concepts of type and *type of housing* as inadequate. Likewise, they considered that the expression health service is not clear; however, they did not recommend a substitute designation. Likewise, on the question: *where do most of the foods you consume come from?* They advised changing the word "they come from" without giving options for change.

The significance of the application of DESOSA81 could be observed because a pilot test was carried out on 5 groups and facilitated the execution of improvements with a view to enhancing

the understanding of the items and descriptors of the performance levels.

Likewise, given the need to construct generic questions that enable the international reach of the instrument, the research group made specific changes in relation to clarity, relevance and vocabulary based on the recommendations given by the participants. Likewise, the suggestion to divide the question into two: *How many hours do you usually sleep? And to what extent do you consider your sleep to be restful (feeling rested the next day)?* (see Table II).

Table II. Changes made from the results of the cognitive interviews

<i>INSTRUMENT FOR MEASURING SOCIAL DETERMINANTS OF HEALTH "DESOSA81"</i>	
<i>PREVIOUS QUESTION</i>	<i>FINAL QUESTION</i>
If you reside in a country other than the one you were born in, what year did you arrive? And do you have nationality? (Only applies to emigrant population)	If you reside in a country other than the one you were born in, what year did you arrive? And do you have nationality? (Only applies to migrant population)
In which city or municipality do you currently live?	In which city, municipality, district or state do you currently live?
What is the quality of water where you live?	What is the quality of the water where you live?
In the last year, have you been notified by the electricity, gas or water company to suspend services to your home?	In the last year, have you had services in your home suspended by the electricity, gas or water company?
In the last 3 months, how often have you felt depressed or anxious?	In the last 3 months, how often have you felt sad, depressed or anxious?
On a normal day, how many meals do you eat in a day (breakfast, lunch, dinner, others)?	On a normal day, how many meals do you eat (breakfast, lunch, dinner, others)?
In the last 3 months, did you consume any type of psychoactive substance such as: amphetamines, heroin, morphine, opium, cocaine, drugs, cannabis, others?	In the last 3 months, did you consume any type of psychoactive substance such as: amphetamines, heroin, morphine, opium, cocaine, drugs, marijuana, others?
How many hours do you usually sleep? And to what extent do you consider your sleep to be restful (feeling rested the next day)?	How many hours do you usually sleep? To what extent do you consider your sleep restful (feeling rested the next day)?

Discussion

The cognitive interview is a qualitative and adaptable method, its central objective lies in assessing the mental processes carried out by those who answer a questionnaire; which allow defining error-type problems in the question-answer process (Collins, 2003). In relation to the above, there are several theoretical models to elucidate how people process information (Willis, 2005), the one used as a guide in this research was that of Jabine, Tanur

and Tourangeau CASM- cognitive aspects of Survey Methodology- (Jabine, et al. 1984), which consists of four phases: 1. Compression, focused on defining whether intentionality and meaning are clear; 2. Recovery, determines, among other aspects, the evocation that is related to whether the responder considers the item important or relevant); 3. Decision / judgment, the individual decides how to respond and 4. Communication of the response, where he chooses the option that he considers most appropriate. These phases were evaluated through the categories clarity, relevance and vocabulary of the instrument items, criteria that were taken into account by Vélez et al. (2017).

According to the above, it can be concluded that there is coherence between the results found and those of other studies such as "Qualitative methodology to focus the quantitative view: the experience of cognitive pre-tests applied to the Health Survey of the Basque Country" (Martín & González Rábago, 2019) in which errors in understanding, recovery and decision were identified. However, unlike the aforementioned study, where most of the errors occurred in comprehension, in the present study these were evident in the retrieval-relevance category. It should be noted that, in some cases, the respondents did not give reasons for the suggested changes, which could be due to different assessments explained by the plurality of the participants' profiles.

Likewise, in the type of research instruments validated through the survey, problems of response errors may arise, understood as "the difference between the observed value (obtained) and the unknown value (real) of the population over the research is being carried out, thus, the errors are not so much mistakes, but rather margins of uncertainty" (Díaz de Rada, 2004) that are difficult to identify and quantify. These errors occur in the development process at different times: when planning, when constructing or in the handling given to the data obtained and which are due to different causes such as the structuring of the items. The above may be based on a series of assumptions that may not be

valid for all people (Martín & González Rábago, 2019; Manrique Abril, et al. 2019), or the response options may not be able to reflect the opinion of the respondent, therefore it is necessary to identify these failures and solve them.

The qualitative assessment of the comprehension problems made in the present study shows that there is similarity to what is described by Collins in “Pretesting survey instruments: An overview of cognitive methods” where it is stated that these can occur due to misunderstandings of words or phrases that generate confusion. , inconsistency in interpretations, as well as elements of cultural context and academic level, or that there was not enough information to choose an answer that they qualify as “I do not understand or it is not clear” (Collins, 2003). According to the above, the study carried out by González and Cujíño (2022) presented the same problem when transmitting the information to the participants, as it allowed us to observe the difficulty in the interpretation of some technical-scientific terminology used, which led to the vocabulary adaptation. Similarly, the present study made changes in terms of terms used that could guarantee relevance, relevance and convenience of the instrument.

In the same way as Martín & González Rábago (2019) point out, sometimes the order of the questions generated comprehension problems. For this reason, caution must be taken when reading the questions to exclude abstract concepts, avoid the use of unknown words or give rise to ambiguity in the items.

In accordance with Collins (2003), the qualitative analysis of the relevance rating showed that people, according to their different profiles, did not always respond according to the established conceptual structure, but rather assessed this category taking into account other assessments. The above can constitute significant biases in the questions and in the final configuration of the instrument; this was taken into account by the research team to make adjustments and optimize the questions.

The qualitative analysis of possible vocabulary errors exposes the difference that, sometimes, exists between academic language and common language (Martín & González Rábago, 2019; Vélez Álvarez, et al. 2021), other times it changes depending on the region. where one is or where one is from, since there are words that in some places have one meaning and, in others, a different one, in this way it happens that they can generate confusion in the understanding of what is expressed (Sánchez Palacio, et al. 2021). Like other studies, such as that of Caicedo and Zalazar (2018), it could be suggested that cognitive interviews are useful to identify response errors in survey research and their results served to optimize the items implemented.

On the other hand, it is necessary that the instrument applied be affordable for the target population, as well as a good degree of satisfaction with the instrument, understanding of the instructions and items, as well as their relevance to the latter. Essential aspects, given that an inadequate understanding of the reagents, dimensions and items can affect the psychometric properties of an instrument (Martínez Valdés & Juárez Hernández, 2019; 2020). In this way, the degree of satisfaction of the items and descriptors is important given that the use of the instrument is affordable in the context in which it is to be applied; In the words of Martínez-Corona et al “the characteristic or quality of feasibility is met” (Martínez Corona, et al. 2020).

On the other hand, it is important to recognize the role played by the interviewer, his epistemological perception and conception of what was done, given that his actions will not only affect the process, but will also impact the analysis carried out on the data obtained. As described, since he is considered a “mediator” between the interview process and the evaluation. In relation to the aforementioned, Willson and Miller cited by Caicedo and Zalazar (2018), support that investigating and knowing the beliefs, positions and points of view of the interviewer, as well as what they aspire to when interviewing, is valuable. The above because it configures the way in

which meaning will be given to the information that the instrument aims to collect and, ultimately, to the research itself.

Conclusions

Comprehension tests provide support for the content - main dimensions and items - of research instruments such as the DESOSA81. In the same way, they are the basis that allows their articulation with statistical tests, relevant aspects that are mentioned as factors that can affect the psychometric properties of an instrument.

Questions were identified that, in the opinion of the participants, should be reviewed in order to adapt the understanding of the instrument. The answers were given based not only on the designed concept, but also on their contexts, beliefs and thoughts according to their level of profession and degree of education, this made it possible to consolidate a generic instrument.

Through the cognitive interview, the recommendations given to the items were analyzed and reviewed, from this the final version of the instrument was reached, increasing the degree of understanding with the certainty that it can be applied to different population groups.

Finally, the understanding of items in quantitative instruments can be improved through qualitative research methods, which provide the possibility of reducing measurement errors by identifying incomprehensible questions or that cannot be answered accurately. To increase the level of understanding of the items in the development of the DESOSA81, comprehension tests such as the cognitive interview were used, with this it was possible to identify and correct flaws in the questions, consequently, the value of the instrument increased.

Recommendations

In the process of designing and validating research instruments, it is necessary to incorporate strategies to detect comprehension problems from a qualitative perspective, which allows improving results and achieving possible homogeneity for widespread use in various contexts with different populations. However, it is necessary for some countries to make lexical-semantic adaptations for its use. Finally, it is recommended to train and train interviewers to deal with this type of difficulties, the way in which they formulate questions and, finally, guide them towards the instructional manual that underlies the generic instrument.

References

- Asociación Médica Mundial. (1968). Declaración de Helsinki de la AMM - Principios éticos para las investigaciones médicas en seres humanos. <https://www.wma.net/es/policias-post/declaracion-de-helsinki-de-la-amm-principios-eticos-para-las-investigaciones-medicas-en-seres-humanos/>
- Barboza Solís, C., Sáenz Bonilla P., Fantin, R., Gómez-Duarte, I., & Rojas-Araya, K. (2019). Theoretical implications for the analysis of social health inequalities: A discussion ethical implications for the analysis of social health inequalities: A discussion. *Odovtos - International Journal of Dental Sciences*, 15–25. <https://doi.org/10.15517/ijds.2020.39097>
- Berlaga Ramírez, L., & Juárez Hernández, G. (2020). Diseño y validación de un instrumento para evaluar la retroalimentación asertiva en educación normal. *IE Revista de Investigación Educativa de la REDIECH*, 11, e791. https://doi.org/10.33010/ie_rie_rediech.v11i0.791
- Berra, S., Rivadero, L., Ponzo, J., Osorio, A. G., Pasarín, M. I., Leyns, C., Álvarez, C. V., Chávez, C. A. S., Molina, D., Fuentes-García, A., Anzoleaga, J. V. M., Plácido, M. T. T., Mora,

- F. G., Terra, A., Valdata, M., Borgonovo, B., Salazar, M., Villanueva, R., & Peresini, V. (2021). Aceptabilidad lingüística en la comprensión de cuestionarios de valoración de servicios de salud en Iberoamérica. *Gaceta sanitaria*, 35(4), 395–398. <https://doi.org/10.1016/j.gaceta.2020.04.019>
- Castells, L. A. (2007). Los protocolos de pensamiento en voz alta como instrumento para analizar el proceso de escritura. *Revista española de lingüística aplicada*, 20, 27–36.
- Collins, D. (2003). Instrumentos de encuesta de prueba previa: una descripción general de los métodos cognitivos. *Quality of Life Research*, 12, 229–238.
- Resolución Número 8430 de 1993. Por la cual se establecen las normas científicas, técnicas y administrativas para la investigación en salud, (04 de octubre de 1993) (testimony of Ministerio de Salud de Colombia). <https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/DE/DIJ/RESOLUCION-8430-DE-1993.PDF>
- Ministerio de Salud y Protección Social. (2015). *Desigualdades Sociales en Salud en Colombia. Informe técnico sexta edición*. <https://www.ins.gov.co/direcciones/ons/informes/6.%20desigualdades%20sociales.pdf>
- Díaz de Rada, V. (2004). Problemas de representatividad en las encuestas con muestreos probabilísticos. *Papers*, 74, 45–66.
- Caicedo Cavagnis, E., & Zalazar Jaime, M. F. (2018). Entrevistas cognitivas: revisión, directrices de uso y aplicación en investigaciones psicológicas. *Revista Avaliação Psicológica*, 17(03), 362–370. <https://doi.org/10.15689/ap.2018.1703.14883.09>
- Espinoza Freire, E. (2020). La investigación cualitativa, una herramienta ética en el ámbito pedagógico. *Conrado*, 16(75), 103–110. <https://conrado.ucf.edu.cu/index.php/conrado/article/view/1392>
- González Hoyos, D. M., & Cujíño Quintero, M. L. (2022). Text Messages Validation and Adaptation for Breastfeeding Promotion. *Hacia la promoción de la salud*, 27(1), 118–128. <https://doi.org/10.17151/hpsal.2022.27.1.9>
- Hernández, C. E., & Carpio, N. (2019). Introducción a los tipos de muestreo. *ALERTA Revista Científica del Instituto Nacional de Salud*, 2(1), 75–79. <https://doi.org/10.5377/alerta.v2i1.7535>
- Holguín Zuluaga, J. A., Vélez Álvarez, C., & Betancurth Loaiza, D. P. (2022). Measuring the social determinants of health: an integrative literature review. *ENTRAMADO*, 18(2). <https://doi.org/10.18041/1900-3803/entramado.2.7868>
- Jabine, T. B., Tanur, J. M., & Tourangeau, R. (1984). *Cognitive Aspects of Survey Methodology: Building a Bridge Between Disciplines*. National Academy Press. <https://nap.nationalacademies.org/read/930/chapter/1>
- Krause, M., & Ballesteros, M. S. (2018). Interseccionalidad en desigualdades en salud en Argentina: discusiones teórico-metodológicas a partir de una encuesta poblacional. *Hacia la promoción de la salud*, 23(2), 13–33. <https://doi.org/10.17151/hpsal.2018.23.2.2>
- Manrique Abril, F., Herrera Amaya G., Méndez Fandiño, Y. (2019). Validity and reliability of the font-roja job satisfaction questionnaire in Colombia. *Hacia la promoción de la salud*, 24(2), 46–59. <https://doi.org/10.17151/hpsal.2019.24.2.5>
- Marmot, M., & Bell, R. (2012). Fair society, healthy lives. *Public Health*, 126, S4–S10. <https://doi.org/10.1016/j.puhe.2012.05.014>
- Martín, U., & González Rábago, Y. (2019).

- Metodología cualitativa para enfocar la mirada cuantitativa: la experiencia de los pre test cognitivos aplicados a la Encuesta de Salud del País Vasco. *Empiria Revista de metodología de ciencias sociales*, 43. <https://doi.org/10.5944/empiria.43.2019.24302>
- Martínez Valdés, M. & Juárez Hernández, L. (2019). Diseño y validación de un instrumento para evaluar la formación en sostenibilidad en estudiantes de educación superior. *IE REDIECH*, 10, 37–54.
- Martínez Corona, I., Palacios Almón, E., & Juárez Hernández, G. (2020). Análisis de validez de constructo del instrumento: “Enfoque Directivo en la Gestión para Resultados en la Sociedad del Conocimiento. *Retos*, 10(19), 153–165. <https://doi.org/10.17163/ret.n19.2020.09>
- Martín Hernández, Á., Eslava Lizaso, C., Delfrade Osinaga, J., González Eransus, R., Moreno Iribas, C., Floristán, Y., Guevara, M., Fuertes Goñi, M. C., Mugarra Bidea, I., Pérez Jarauta, M. J., Echauri Ozcoidi, M., Ardanaz, E., & Cambra, K. (2020). Observatorio de Salud Comunitaria de Navarra: puesta en marcha y primeras experiencias. *Revista española de salud pública*, 94. http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1135-57272020000100028&lng=es
- Ministerio de Salud de Colombia. (1993). Resolución Número 8430 de 1993. Por la cual se establecen las normas científicas, técnicas y administrativas para la investigación en salud. <https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/DE/DIJ/RESOLUCION-8430-DE-1993.PDF>
- Moral Santaella, C. (2006). CRITERIOS DE VALIDEZ EN LA INVESTIGACIÓN CUALITATIVA ACTUAL. *Revista de Investigación Educativa*, 24(1), 147–164. <https://www.redalyc.org/articulo.oa?id=283321886008>
- Moura de Gois, J., Gomes de Lira R., Diógenes de Oliveira-Filho, R., Nunes, L. & Costa de Oliveira, J. (2020). Social vulnerability in the pandemic period: correlation between social determinants of health and COVID-19 incidence in Brazilian regions. *Research, Society and Development*, 9(9), e158996734. <https://doi.org/10.33448/rsd-v9i9.6734>
- Ribeiro, I., Mayer, A., Miranda, A., & De Pina, M. (2017). The Portuguese version of the European Deprivation Index: An instrument to study health inequalities. *Acta médica portuguesa*, 30(1), 17–25. <https://doi.org/10.20344/amp.7387>
- Sánchez Palacio, N., Vélez Álvarez, C., & Betancurth Loaiza, D. P. (2021). Validación de contenido y adaptación de la escala de sentido de coherencia 29 para la población colombiana. *Revista Facultad Nacional de Salud Pública*, 39(3), e342827. <https://doi.org/10.17533/udea.rfnsp.e342827>
- Schülter Buss Heidemann, I. T. (2020). Promoción de la salud y la articulación con los determinantes sociales. *Hacia la promoción de la salud*, 25(1), 9–10. <https://doi.org/10.17151/hpsal.2020.25.1.1>
- Torquemada González, A., & Loredo Enríquez, J. (2021). Validación de un Cuestionario de Evaluación de la Ética Profesional Docente Universitaria. *Revista iberoamericana de evaluación educativa*, 14(1), 101–114. <https://doi.org/10.15366/rie2021.14.1.006>
- Subsecretaría de Salud Pública de Chile. (2018). Sentando las bases de una nueva Salud Pública para Chile. <http://biblioteca.digital.gob.cl/handle/123456789/3576>
- Vélez Álvarez, C., Jaramillo Ángel, C. P., García Ramírez, J. A., & Barrera Valencia, C. (2017). Adaptación transcultural de mensajes de texto para autocuidado en gestantes. *Investigaciones Andina*, 19(34), 1813–1828. <https://doi.org/10.33132/01248146.935>

Vélez Álvarez, C., Vidarte Claros, J. A., Arango Arenas, A., Patiño Palma, B. E., & Rondón Villamil, Y. A. (2021). Adaptation and validation of content of the sedentary behavior questionnaire. *Hacia la promoción de la salud*, 26(1), 148–162. <https://doi.org/10.17151/hpsal.2021.26.1.12>

Willis, G. (2005). *Cognitive Interviewing*. SAGE Publications, Inc.

Zuluaga, H., & Alejandro, J. (2022). Diseño y validación de contenido de un instrumento para la medición de los determinantes sociales de la salud. *Facultad de Ciencias para la Salud*.