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Research article

What motivates students to pursue a career in gerontological nursing? The cultural adaptation and validation of the Spanish version of the CMGN questionnaire

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A B S T R A C T

Background: Career motivation toward gerontological nursing (CMGN) has been studied by various authors. It is essential to identify the influencing factors and guarantee that undergraduate nursing degrees provide adequate social and healthcare responses to the current demand for gerontological care. *Objective*: In the absence of a validated instrument to measure students' career motivation in geriatric nursing in our sociocultural context, this study aimed to adapt and validate the original questionnaire Chinese CMGN. *Methods*: Cross-sectional data from 316 nursing students were collected in May 2021. The cultural and linguistic adaptation process was conducted in accordance with the recommendations of Ramada-Rodilla and Beaton. A committee of experts was established to assess content validity. The CMGN questionnaire consists of 20 items divided into 2 subscales: "Expectancy" (6 items) and "Values" (14 items). To determine the psychometric properties, the following analyses were carried out: content validity (Aiken's V coefficient and Pearson's coefficient of variation), internal consistency (Cronbach's α) and construct validity (confirmatory factor analysis and convergent and divergent validity). To verify the model once the parameters were estimated, we calculated the goodness-of-fit between the model and the data. Data analyses were performed using SPSS for Windows (IBM SPSS Statistics 25.0) and Analysis of Moment Structures (AMOS 27.0).

Results: A total of 316 nursing students were surveyed, of which 91.1% were women and the mean age was 21.61 ± 5.45 years (range: 18–56). The results indicate that the psychometric properties of the questionnaire were adequate in terms of content and construct validity. The internal consistency using Cronbach's alpha for both subscales was greater than 0.8. The AMOS results revealed that the final model fit statistics of CMIN/df (2.204), GFI (0.922), CFI (0.948) and RMSEA (0.062) indicated a satisfactory model fit. Finally, an original second-order model was obtained, resulting in the Spanish version of the CMGN (SV-CMGN) instrument. *Conclusions*: We developed a valid SV-CMGN questionnaire that is socially and culturally adapted to the Spanish context and is capable of measuring the motivation of nursing students toward a career in gerontological nursing, from the newest to the most experienced. This new version opens up the possibility of studying the phenomenon of motivation in other Spanish-speaking countries. Keywords: Gerontological nursing; Motivation; Students, nursing; Validation study; Surveys and questionnaires.

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1. Introduction

According to the World Health Organization [1], all countries have observed an increase in the number of older adults and the world's population is aging much faster than in the past. The population of people over 60 years is estimated to double by 2050, reaching 2.1 billion people. Furthermore, the number of older adults aged 80 years and over is expected to triple between 2020 and 2050, up to a total of 426 million.

As people age, the likelihood of developing health problems increases, with the most common issues being sensory deficits, back and neck pain, osteoarthritis, chronic obstructive pulmonary disease, diabetes, depression, and dementia. Geriatric syndrome (i.e., complex health issues) is another common problem [1]. The complex health-related changes experienced by older adults have resulted in a growing need for comprehensive, people-centered care. Consequently, we need to create a social and healthcare infrastructure in which professionals are provided with the sound academic training required to satisfy the needs of the aging population [2].

However, university health-science students (including nursing students) are often poorly motivated to work in the field of gerontology [3,4]. This has been linked to various factors, including the prevalence of negative stereotypes related to aging [5], scarce experience and theoretical knowledge in the field of care [4], prejudice against older adults [6,7], lack of clinical opportunities in the field of gerontology [8], lack of social status and lower income [9] and anxiety about aging [10,11].

In contrast, factors such as having a positive attitude toward older adults [12,13], having experience caring for older adults [4], greater theoretical knowledge about aging [7,14], having regular contact or living with older adults [9,11], and engaging in gerontological clinical practice with older adults [11] have been associated with greater willingness to work with this population.

Nursing degree syllabuses should guarantee that students receive the training required to adequately care for older adults [6, 15–18]. Authors such as Dahlke et al. [6] have indicated how important it is during nursing training to create spaces in which to discuss issues such as ageism and argued that clinical practice should be seen as an opportunity to objectively observe how ageism is perpetuated in the clinical setting. These authors also highlighted that researchers and higher-ranking nurses have a responsibility to try to decrease the effects of this discrimination on future generations of nurses.

In our context, the syllabus of the undergraduate nursing degree program run by the University of the Basque Country (UPV/EHU) comprises both theoretical and practical modules that include all the competencies linked to gerontological nursing. Specifically, this content is covered in the Life Cycle Nursing II module taught in year 2 of the undergraduate degree program and is also reflected in the fact that at some point in their degree program, students are obliged to engage in at least one series of practical activities in the field of gerontology in a long-term care nursing home (LTNH).

Therefore, it is evident that educational institutions are responsible for preparing nursing students to provide quality care to older adults and motivating them to pursue careers in the geriatric field after graduation.

2. Background

To analyze the phenomenon of nursing students' lack of motivation toward older adults, and their willingness to work in the geriatric field, the tools most commonly used by most scholars were Kogan's scale of attitudes toward older adults [19] and Palmore's facts on aging quiz [20]. To work in depth on this phenomenon, other scholars have seen the need to analyze other concepts such as intention, willingness, and motivation.

Intention to work with older adults has been analyzed most of the time, starting from the theory of planned behavior (TPB) [21]. According to this theory, there are three types of beliefs: attitude, subjective norm, and perceived behavioral control. Based on this theory, several questionnaires have been developed and adapted to the field of geriatrics [22,23].

The willingness of nursing students to work with older adults was examined, on the one hand, by Aday and Campbell [24] and Zhang et al. [14] who developed ad hoc questionnaires for their research. On the other hand, Momtaz et al. [25] developed a questionnaire based on TBP theory and validated it with medical students.

Career motivation toward gerontological nursing (CMGN) has been studied by Chai et al. [10] and Cheng et al. [11]. Cheng et al. [26] developed a questionnaire based on the theory of expectancy and values, with expectancy referring to the successful completion of tasks in the field of gerontology and values referring to the assessment of work in the same field. The phenomenon of CMGN was also analyzed by Chai et al. [10], who viewed motivation from the perspective of the key premise of determinism within Bandura's social learning theory. This premise posits that the environment, personal characteristics, and behaviors interact with each other [27]. The same authors also attempted to identify possible personal and contextual factors that may influence CMGN among final-year undergraduate nursing students.

In light of the above, it is crucial to examine students' career motivation toward gerontological nursing in order to identify the factors that influence it and ensure that undergraduate nursing programs adequately address the current demand for gerontological care in society and the healthcare system.

Given the absence of a validated instrument to measure CMGN in our sociocultural context, this study aimed to adapt and validate the original Chinese CMGN questionnaire developed by Cheng et al. [26].

3. Methods

3.1. Design

A cross-sectional study was conducted with undergraduate nursing students to culturally adapt and validate the original Chinese

questionnaire on CMGN in the Spanish context. Data were collected in May 2021, using an online version of the CMGN questionnaire via encuestafacil.com.

3.2. Configuration and participants

The sample comprised 466 students from years 1, 2, 3, and 4 of an undergraduate nursing degree program run by the Faculty of Medicine and Nursing in San Sebastián (UPV/EHU). All the participants were enrolled in a practicum course. Undergraduate nursing students who were not enrolled in the practicum course were excluded. Of the 466 students who were sent the questionnaire, 332 responded, of whom 16 were excluded due to lack of data. The final sample consisted of 316 nursing students. According to our calculations, the sample size required to ensure sufficient statistical power was 211 participants, with a maximum margin of error of 5% and a 95% confidence interval.

3.3. Instrument

3.3.1. Translation and cultural adaptation process

The cultural and linguistic adaptation processes were conducted in accordance with the recommendations of Ramada-Rodilla et al. [28] and Beaton et al. [29,30]. We contacted Cheng to request the original questionnaire, and asked for permission to proceed with its sociocultural adaptation. The author provided a copy of the instrument and stated her willingness to help clarify any doubts that may have arisen during the process. Direct translation was performed by a professional bilingual translator (Chinese-Spanish). A committee of six experts was established to assess the content validity.

3.3.2. Career motivation toward gerontological nursing questionnaire

The original Chinese version of the CMGN questionnaire by Cheng et al. [26] comprised 20 items rated on a 5-point Likert-type scale (1 = totally disagree, 5 = totally agree). The items were grouped into 2 subscales: "Expectancy" (6 items) and "Values" (14 items). The second subscale was further divided into four dimensions: interest, utility, attainment value, and cost (Table 1). Higher scores indicate that nursing students are more motivated to seek a career in gerontological nursing [10,11].

3.4. Validation and data analysis

To determine the psychometric properties of the CMGN questionnaire, the following analyses were performed: content validity (Aiken's V coefficient and Pearson's coefficient of variation), internal consistency (Cronbach's α) and construct validity (confirmatory factor analysis [CFA] and convergent and divergent validity).

A multidisciplinary committee was established with six experts in tutoring students in the field of gerontology. The committee members, acted as judges and assessed the content validity of the questionnaire from both quantitative and qualitative perspectives, considering four aspects: suitability (adaptation of the items to established theoretical factors), clarity (ease of understanding of the items, semantic suitability, and syntax), consistency (adaptation of the items to their corresponding dimensions), and relevance (importance of the item in the questionnaire) [31]. The quantitative assessment was conducted using a 5-point Likert-type scale, with Aiken's V coefficient being calculated along with the corresponding 95% confidence intervals and Pearson's coefficient of variation. Items with an Aiken's V coefficient of <0.70 and a variation coefficient of $>0.25\%$ were tagged for review [32]. Analyses were conducted using Microsoft Office Excel 2007. Qualitative assessment of the questionnaire focused on the items, responses, and titles of the dimensions [29,30].

The substructure of the Values subscale indicated a second-order CFA. Indeed, the strong correlations observed between some of the four sub-constructs of the Values subscale would lead to serious problems of divergent invalidity in a first-order CFA (the square root of the average variance extracted [AVE] for each construct in the Values subscale was smaller than the absolute value of the correlations with another factors, and the AVE itself was lower than the maximum shared variance [MSV] for each construct), thereby confirming the second-order structure (Table 2).

To verify the model once the parameters were estimated, we calculated the goodness-of-fit between the model and the data. The principal goodness-of-fit indicators used were the chi-square minimum/degrees of freedom ratio (CMIN/df), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA).

Table 1
Subscales and dimensions of the career motivation toward gerontological nursing questionnaire, with their corresponding items.

SUBSCALES AND DIMENSIONS	ITEMS
Expectancy	EA1, EA2, EA3, EA4, EA5, EA6
Values	
Interest	CV1, CV2, CV3
Utility	CV4, CV5, CV6
Attainment value	CV7, CV8, CV9, CV10, CV11
Cost	CV12, CV13, CV14

EA = Expectancy CV = Values.

Table 2
Correlations between the four sub-constructs of the Values subscale.

	CR	AVE	MSV	CV_ATTAINMENT VALUE	CV_INTEREST	CV_UTILITY	CV_COST
CV_ATTAINMENT VALUE	0.828	0.492	0.778	**0.701**			
CV_INTEREST	0.751	0.505	0.521	0.722	**0.711**		
CV_UTILITY	0.542	0.310	0.778	0.882	0.596	**0.557**	
CV_COST	0.713	0.475	0.618	0.557	0.323	0.786	**0.689**

CR = Composite Reliability; AVE = Average Variance Extracted; MSV = Maximum Shared Variance.
Diagonal cells: square root of the AVE; other cells: correlations between constructs.

Data analysis was conducted using SPSS 25.0 for Windows (IBM SPSS Statistics 25.0) and Analysis of Moment Structures (AMOS 27.0).

4. Results

The mean age of the 316 nursing students was 21.61 ± 5.45 years (range: 18–56) and 91.1% were women. 34.5% were enrolled in 1st year, 31% in 2 nd year, 17.1% in 3rd year and 17.4% in 4th year. The majority had older relatives (89.9%), had been cared for by their grandparents (69%), and only 10% lived with older people. More than half (52.5%) had experience in caring for older adults.

4.1. Content validity

During the judges' quantitative assessment, eight items were tagged for review in one or more of the three aspects considered in accordance with the criteria established in relation to Aiken's and Pearson's coefficients. For the Expectancy subscale, items EA1 and EA5 were tagged in relation to clarity, and items EA1, EA2, and EA6 were tagged in relation to suitability. In the Values subscale, items CV5 and CV14 did not attain the required values for relevance.

In the qualitative assessment, all items on the Expectancy subscale were tagged for clarity, and three items (EA1, EA2, and EA6) were tagged for suitability, with the judges questioning whether they fit the theoretically established factors. In relation to the Values subscale, 71% of the items (CV2, CV4, CV5, CV7, CV8, CV9, CV10, CV11, CV13, and CV14) were tagged for clarity and two items (CV5 and CV14) were also tagged for relevance.

4.2. Validity and reliability of the proposed constructs

As shown in Table 3, the Cronbach's α values were high (over 0.7) [33] for both principal subscales, thereby confirming the reliability of the questionnaire.

4.3. Confirmatory factor analysis

Fig. 1 shows the original second-order model.

The CFA carried out with the original subscales did not return optimal quality indexes: CMIN/df = 3.446, GFI = 0.844, AGFI = 0.801, CFI = 0.840, RMSEA = 0.088, and *P*-VALUE = 0.000 [34].

Therefore, the decision was made to eliminate the items with loadings lower than 0.5 [35,36]: EA1, EA2, EA6, CV5, and CV14.

Fig. 2 shows the values returned by CFA after eliminating items that lowered the quality of the results.

In the latest model (Fig. 2), all factor loadings were over 0.5 [35,36], and only one was under 0.7 [37,38]. The Cronbach's α values were excellent: 0.899 for the Expectancy subscale and 0.889 for the Values subscale.

The quality indexes for the model were also optimal: CMIN/df = 2.204, GFI = 0.922, AGFI = 0.894, CFI = 0.948, RMSEA = 0.062, and *P*-VALUE = 0.051 [34].

Table 3
Reliability of the questionnaire subscales and dimensions.

SUBSCALES AND DIMENSIONS	CRONBACH'S α
Expectancy	0.804
Values	0.901
Interest	0.739
Utility	0.539[a]
Attainment value	0.823
Cost	0.672

[a] Although this sub-construct did not attain an acceptable α value, since it forms part of a broader dimension, the global α value was acceptable (>0.9).

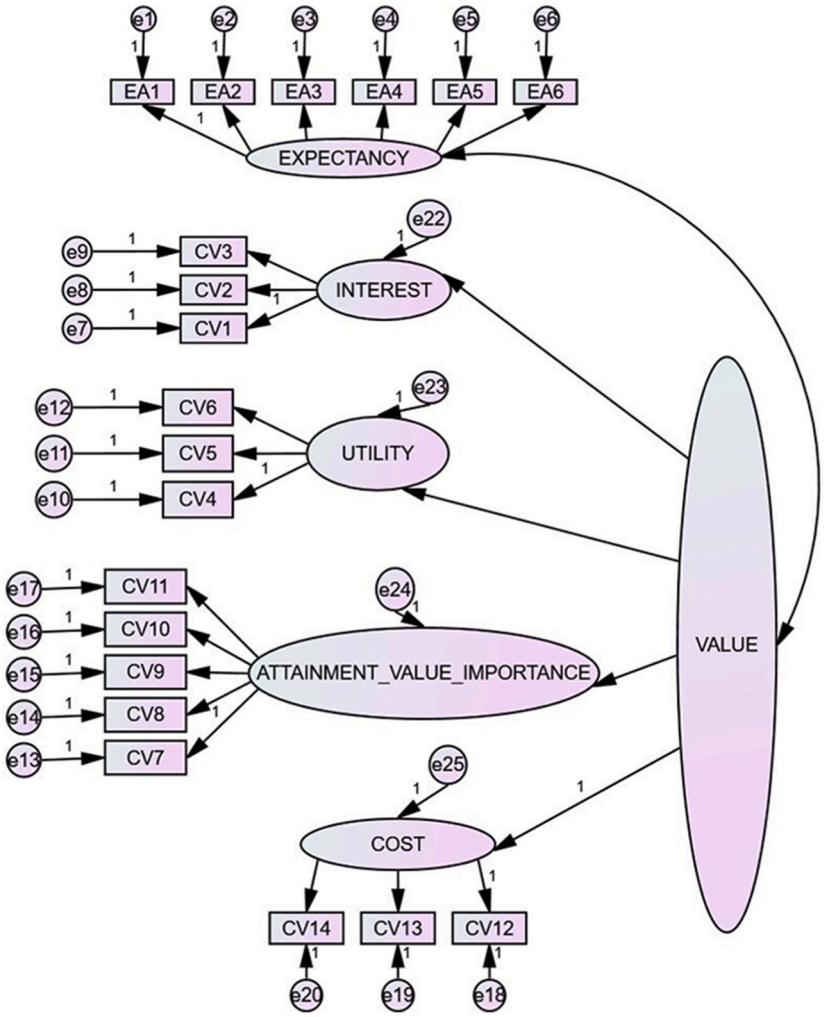

Fig. 1. CFA of the original second-order model. The standardized factor loadings are shown next to the arrows between items and first and second-order constructs. The curved arrow indicates the correlation between constructs.

4.3.1. Construct validity: convergent and divergent

The values obtained for the two constructs were AVE>0.5, and composite reliability (CR) > 0.7, with loadings over 0.5 (Table 4) [34]. Therefore, convergent validity was confirmed.

Finally, the MSV for both constructs was 0.002 (<AVE). Moreover, the square roots of the AVE for the two constructs (0.868 and 0.830, respectively) were higher than the correlation between them (0.043), as shown in Table 5 [34,39]. Thus, divergent validity was confirmed.

5. Discussion

This study aimed to translate and socially and culturally adapt the original Chinese CMGN scale for use with undergraduate nursing students in Spanish universities.

The results indicated that the psychometric properties of the questionnaire were adequate in terms of content validity, internal consistency, and construct validity. A final original second-order model was obtained, giving rise to the SV-CMGN.

The recommendations of Beaton et al. [29] were followed throughout the cross-cultural adaptation process, except for those pertaining to the back-translation phase. Epstein et al. [40] argued that this phase is not relevant to the sociocultural adaptation process, given the greater importance attached to the assessment carried out by the expert committee. In this study, the qualitative and quantitative assessments conducted by the experts were highly productive. During the qualitative assessment, most comments about the items were linked to their clarity, and suggestions made by the experts regarding the semantic and syntactic adaptations required to make them easier to understand were considered. Furthermore, the experts expressed uncertainty regarding the suitability of items EA1, EA2, and EA6 from the Expectancy subscale and the relevance of items CV5 and CV14 from the Values subscale, suggesting that

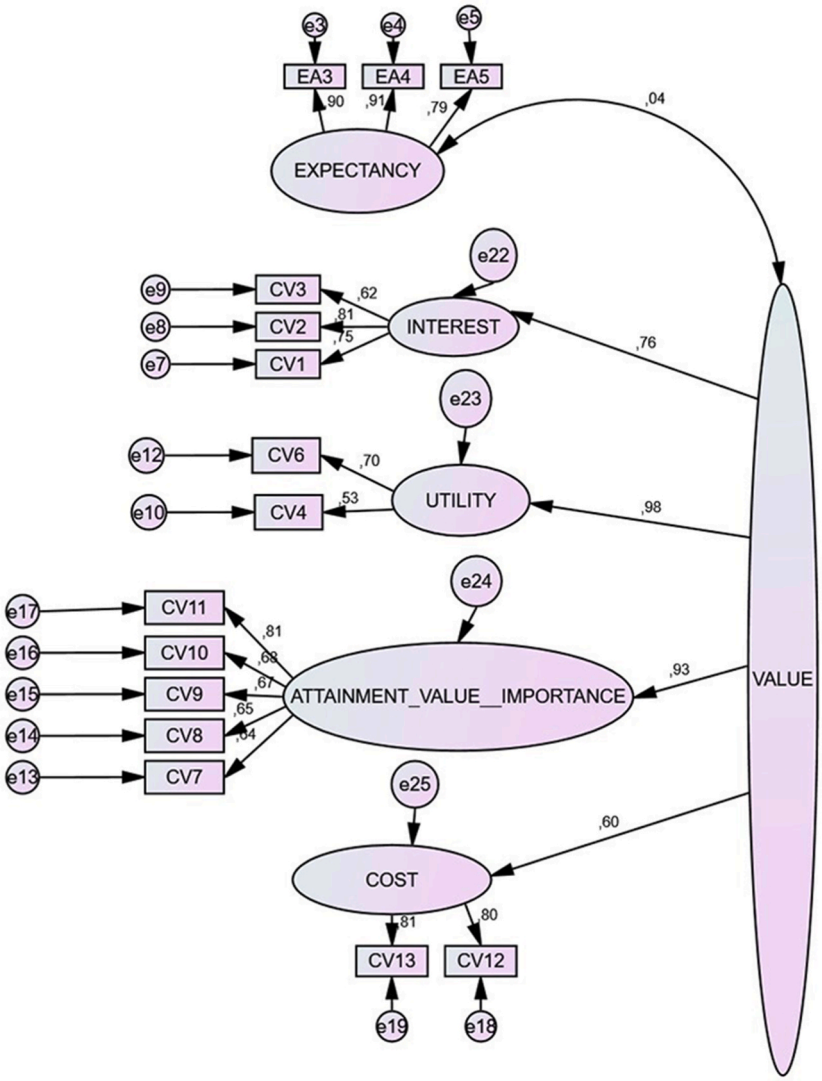

Fig. 2. CFA after eliminating items EA1, EA2, EA6, CV5, and CV14. The standardized factor loadings are shown next to the arrows between items and first and second-order constructs. The curved arrow indicates the correlation between constructs.

these items might generate controversial results in subsequent validation analyses.

In relation to the reliability results, high Cronbach's α values (over 0.7) were obtained in both models [33], with said values being excellent in the final second-order model (0.89 for both the Expectancy and Values subscales). Similar values were obtained during the validation of the original questionnaire [26]: 0.83 and 0.87 for the Expectancy and Values subscales, respectively.

In terms of construct validity, the second model produced optimal results once items EA1, EA2, and EA6 were eliminated from the Expectancy subscale and items CV5 and CV14 were eliminated from the Values subscale (all these items had factor loadings of under 0.5).

The questionnaire was created by the original authors based on the theory of expectancy and values, with expectancy referring to the successful completion of tasks in the field of gerontology and values referring to the assessment of work in the same field. In our academic context, expectancy is understood as the acquisition of gerontological competencies that are developed during a gerontology practicum activity after being taught at a theoretical level.

The competencies that students are expected to acquire during their undergraduate nursing degree represent their ability to successfully complete certain tasks in a specific professional area [41]. This requires students to acquire knowledge, attitudes, and abilities. Even after items EA1, EA2, and EA6 were eliminated, expectancies (understood as competencies) were still clearly reflected in the remaining items (EA3, EA4, and EA5), with the new model returning significantly better results.

In the Values subscale, the committee of experts identified CV5 and CV14 as having little relevance. Item CV5 from the utility subdimension comprised a statement that also included negation: "Focusing on gerontological care does not limit my choice in terms of the city in which I can work." However, this formulation is ambiguous and may lead to uncertainly. Furthermore, this statement does not

Table 4
Dimensions and convergent validity of the measurement scales.

CONSTRUCTS	STANDARDIZED COEFFICIENTS
Expectancy	
EA3	0.898[a]
EA4	0.913[a]
EA5	0.789[a]
Cronbach's α	0.899
CR (Composite Reliability)	90.2%
AVE (Average Variance Extracted)	75.4%
Values	
CV_INTEREST	0.756[a]
CV_UTILITY	0.983[a]
CV_ATTAINMENT VALUE	0.929[a]
CV_COST	0.599[a]
Cronbach's α	0.889
CR (Composite Reliability)	89.6%
AVE (Average Variance Extracted)	68.9%
MODEL FIT INDEXES	
CMIN/DF	*2.204*
CFI	*0.948*
GFI	*0.922*
AGFI	*0.894*
RMSEA	*0.062 (P 0.051)*

[a] Coefficients were deemed significant at 99% of the confidence level (p-valor<0.01).

Table 5
Divergent validity of the constructs.

				Square root of the AVE for each construct and correlation between constructs	
	CR	AVE	MSV	EXPECTANCY	VALUES
EXPECTANCY	0.902	0.754	0.002	0.868	
VALUES	0.896	0.689	0.002	0.043	0.830

make much sense in our social and healthcare environment since there are many jobs available in the local geographical area in both healthcare settings and gerontological care centers, with people wanting to work in gerontology rarely having to move to another city to find employment. In relation to item CV14, from the costs sub-dimension, the statement "The working environment of gerontological care will have a negative impact on my mood" was deemed difficult to understand, since no evidence exists of professionals from gerontological care centers having more mood disorders than nurses working in primary care or hospital settings. According to the extant literature, mood alterations are more common among nurses working in "High Risk Units," which include areas such as oncology, the emergency department, intensive care and pediatrics [42–44].

In relation to the CFA, the original subscales did not return optimal quality indexes, although after items EA1, EA2, EA6, CV5, and CV14 were eliminated, the quality values were acceptable. In addition to ensuring better results, the elimination of these items was justified by the comments made previously by the committee of experts, as all were considered expendable.

In line with research that has used the CMGN [10,11,45], this questionnaire provides detailed information on nursing students' motivation as it covers the phenomenon from the dimensions of expectations and values. The subdimensions of attainment value, interest, utility, and cost tell us about the specific aspects related to the future professional development of geriatric nursing. In addition, it facilitates the interaction with other questionnaires, such as Kogan's attitudes [19], Palmore's knowledge [20], Momtaz's willingness [25], Davis' Interpersonal Reactivity Index (IRI) [46], and Lasher's Anxiety about Aging Scale (AAS) [47], among others in order to obtain a broader and more enriching view of the phenomenon.

The results obtained by Chai et al. [10] and Cheng et al. [11] in their research on the motivation of nursing students towards a geriatric career have been widely cited by authors who analyzed the same phenomenon. This finding suggests that the approach is valued and arouses interest.

5.1. Strengths and limitations of the study

Throughout this study, all analyses were conducted with the same sample of undergraduate students engaged in clinical practice within the field of gerontology. Students completed their practicum in 38 different gerontological-social-healthcare centers with a wide range of different characteristics in terms of the number of residents, management fields, geographical and demographic distribution, and socioeconomic status. This adds value to the validation of the questionnaire, as we were able to measure CMGN in different scenarios, although all were LTNH centers.

The validation process was conducted with students from all years of the four-year undergraduate nursing degree course, and the

questionnaire was distributed across all levels. Previous studies tended to limit the use of questionnaires to students in the final two years of their degree. We believe that analyzing CMGN among students from the first year of their degree onward may foster the implementation of anticipatory measures designed to improve motivation in this student body.

Regarding the criteria established in the validation process, a value of 0.5 was established for the correlation coefficient. This was based on the recommendations of Hair et al. [34] regarding model adaptation and correction criteria and differed from those used by the authors of the original questionnaire, which established a limit of 0.4. The convergent and divergent validity analyses also supported the final results obtained in the validation process.

One of the limitations of this study was the higher number of female participants than male participants. This is common in research conducted with nursing students and is consistent with the original questionnaire. Another drawback is that the analysis did not include test–retest data [28]. In addition, for the questionnaire to be used reliably in other Spanish-speaking contexts, it must be tested in accordance with the corresponding validity criteria.

Finally, it has been difficult to contrast the results and discussion of motivation with the current research because this concept was developed using the CMGN questionnaire (only available in its original Chinese version) [26]. This has led to a limited number of studies using the CMGN questionnaires.

6. Conclusions

We obtained a valid SV-CMGN that is socially and culturally adapted to the Spanish context and is capable of measuring nursing students' motivation toward a career in gerontological nursing. This opens up the possibility of studying motivation in nursing students in other Spanish-speaking countries.

The SV-CMGN questionnaire offers the advantage of being suitable for use by all nursing students, from the newest to the most experienced. In addition, it provides detailed information on specific aspects of motivation such as expectations and values. This would open up the possibility of facilitating nursing educators in establishing concrete strategies to promote a positive vision of older adult care. In view of the above, we believe that this would help future professionals to perceive the geriatric field as a stimulating professional opportunity.

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Ethics

This study was approved by the Ethics Committee for Research on Human Beings of the University of the Basque Country (UPV/EHU): Code number M10/2019/250). Written informed consent was obtained from all participants.

Availability of data

The data generated and utilized for analyses of the results presented in this manuscript are available from the corresponding author upon request.

Data availability statement

Data will be made available on request.

CRediT authorship contribution statement

Josune Zubeldia-Etxeberria: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization. **Beatriz Pereda-Goikoetxea:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization. **Udane Elordi-Guenaga:** Writing – review & editing, Software, Investigation, Data curation. **Nagore Zinkunegi-Zubizarreta:** Writing – review & editing, Software, Investigation, Data curation. **Nerea Elisabethe Liceaga-Otazu:** Writing – review & editing, Visualization, Conceptualization. **Begoña Sanz:** Writing – review & editing, Validation, Resources, Conceptualization. **Maider Ugartemendia-Yerobi:** Writing – original draft, Supervision, Project administration, Methodology, Funding acquisition, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.heliyon.2024.e28477.

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