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RESEARCH ARTICLE (ORIGINAL)

# The FANTASTIC questionnaire: Translation, adaptation, and validation of the lifestyle assessment instrument in Portuguese preadolescents

*O meu estilo de vida FANTASTICO: Tradução, adaptação e validação do questionário em pré-adolescentes portugueses*

*Mi estilo de vida FANTASTICO: traducción, adaptación y validación del cuestionario en preadolescentes portugueses*

Filipe Rodrigues-Pires [1, 2]
https://orcid.org/0000-0002-7988-0578

Constança Festas [1]
https://orcid.org/0000-0003-0445-0458

João Amado [1]
https://orcid.org/0000-0003-0358-7970

João Neves-Amado [1]
https://orcid.org/0000-0002-5330-779X

Sofia Almeida [1]
https://orcid.org/0000-0002-1874-0432

[1] Universidade Católica Portuguesa, Institute of Health Sciences (ICS), Center for Interdisciplinary Research in Health (CIIS), Porto, Portugal

[2] Health Service of the Autonomous Region of Madeira,SESARAM, Health service of RAM, Funchal, Portugal

**Corresponding author**
Adelino Filipe Rodrigues Pires
E-mail: filipepires88@gmail.com

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**Abstract**

**Background:** Lifestyles built in pre-adolescence will influence all human development throughout the life cycle. Its diagnosis constitutes an effective need for the provision of nursing care in terms of school health.

**Objective:** To translate, adapt and validate the FANTASTICO questionnaire for Portuguese pre-adolescents.

**Methodology:** A process of translation and adaptation of the questionnaire was carried out using the Delphi technique. A specific computer base it was created. An exploratory study was carried out to evaluate the instrument's psychometric properties. The process took place between January and July 2019.

**Results:** The translated version and adapted by an expert panel maintained the 30 items of the original instrument. The exploratory study revealed that the instrument has good psychometric properties with a total Cronbach's alpha of 0.72.

**Conclusion:** The Portuguese version O Meu Estilo de Vida FANTASTICO (pre-adolescents) is a good measuring instrument to assess the lifestyles of Portuguese pre-adolescents.

**Keywords:** life style; adolescent; community health nursing; surveys and questionnaires; delphi technique

**Resumo**

**Enquadramento:** Os estilos de vida construídos na pré-adolescência influenciarão todo o desenvolvimento humano ao longo do ciclo vital. O seu diagnóstico constitui uma necessidade efetiva para a prestação dos cuidados de enfermagem ao nível da saúde escolar.

**Objetivo:** Traduzir, adaptar e validar o questionário FANTASTICO para pré-adolescentes portugueses.

**Metodologia:** realizou-se um processo de tradução e de adaptação do questionário com recurso à Técnica de Delphi. Foi criada uma base informática específica. Realizou-se um estudo exploratório para avaliar as propriedades psicométricas do instrumento. O processo desenvolveu-se entre janeiro e julho de 2019.

**Resultados:** A versão traduzida e adaptada em painel de peritos, manteve os 30 itens do instrumento original. O estudo exploratório revelou que o instrumento apresenta um bom alfa de Cronbach total de 0,72.

**Conclusão:** A versão portuguesa O Meu Estilo de Vida FANTASTICO (pré-adolescentes) constitui um bom instrumento de medida para avaliar os estilos de vida dos pré-adolescentes portugueses.

**Palavras-chave:** estilo de vida; adolescente; enfermagem em saúde comunitária; inquéritos e questionários; técnica delfos

**Resumen**

**Marco contextual:** Los estilos de vida construidos en la preadolescencia influirán en todo el desarrollo humano a lo largo del ciclo vital. Su diagnóstico es una necesidad efectiva para la prestación de cuidados de enfermería en el ámbito de la salud escolar.

**Objetivo:** Traducir, adaptar y validar el cuestionario FANTASTICO para preadolescentes portugueses.

**Metodología:** Se llevó a cabo un proceso de traducción y adaptación del cuestionario mediante la técnica Delphi. Se creó una base de datos informática específica. Se realizó un estudio exploratorio para evaluar las propiedades psicométricas del instrumento. El proceso se desarrolló entre enero y julio de 2019.

**Resultados:** La versión traducida y adaptada en panel de expertos mantuvo los 30 ítems del instrumento original. El estudio exploratorio mostró que el instrumento tiene un buen alfa de Cronbach total de 0,72.

**Conclusión:** La versión portuguesa Mi Estilo de Vida FANTASTICO (preadolescentes) constituye un buen instrumento de medida para evaluar los estilos de vida de los preadolescentes portugueses.

**Palabras clave:** estilo de vida; adolescente; enfermería en salud comunitaria; encuestas y cuestionarios; técnica delfos

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## Introduction

The constant transformations that occur worldwide have been changing the lifestyles and behaviors of societies, with each culture adopting its own lifestyles. Individuals build their lifestyles individually and in groups based on what they have learned from their families, friends, school, and the surrounding community.

The world has changed significantly since the Ottawa Charter for Health Promotion was adopted 30 years ago. According to the World Health Organization (WHO, 2018), the new threats to health and well-being are exciting new opportunities for health promotion. Today, health promotion is part of the transformations and updating of nursing practices, constituting a unique opportunity to address health and its determinants in an integrated and innovative way.

Human beings adopt lifestyles throughout their life cycle; however, according to Duarte et al. (2022), the early stages of development have more influence on the creation of a lifelong pattern of behavior.

As nursing is closely linked and committed to building healthy lifestyles in the community, it is important to have instruments that measure lifestyles in the various stages of human development. This is the only way to carry out a community health nursing diagnosis and identify the needs expressed and felt by the community, as described by Melo (2020). Thus, the translation, adaptation, and validation of the FANTASTIC questionnaire for Portuguese preadolescents were considered a priority area.

## Background

There are some instruments in the literature validated for the Portuguese population that assess the lifestyles of young people and adults. However, there is a great need for the development, adaptation, and validation of adequate instruments for preadolescents. According to Breinbauer (2008), citing the World Health Organization, pre-adolescence is identified as the phase of life from ages 9 and 12 in girls and ages 10 and 13 in boys.

Several studies refer to the FANTASTIC instrument, which assesses lifestyles in several dimensions: physical, social, and emotional. It was initially developed by Wilson et al. (1984) and later improved for use at the University of Chile to help physicians measure their patients' lifestyles for subsequent implementation of improvement strategies. In the translation and validation processes, its content and language have changed to adapt to several settings.

In Portugal, the instrument validated by Silva et al. (2014) with university students, similar to the Spanish version developed in Chile, is called *Estilo de Vida Fantástico*. If there were a Portuguese version of the instrument, it would be possible to use and adapt it to preadolescents. However, considering that a version of this instrument for preadolescents was developed at the Universidad del Norte in Colombia by Loiza et al. (2015), the authors decided to translate, adapt, and validate it for the Portuguese population.

According to Loiza et al. (2015), the instrument contains 30 questions with three response options rated from 0 to 2. The questionnaire is divided into 10 dimensions: F: Family and friends, A: Activity (Physical and Social), N: Nutrition, T: Toxics, A: Alcohol, S: Sleep and stress, T: Type of personality and academic satisfaction, I: Insight, C: Health control and sexuality, O: Order.

Individual lifestyles are calculated by summing the answers and multiplying by two. Its interpretation is based on the following intervals: 103-120 - *Congratulations, you have a fantastic lifestyle*; 85-102 - *Good job, you're on the right track*; 73-84 - *Adequate, you're fine*; 47-72 - *Somewhat low, you could improve*; 0-46 - *You are in a danger zone, but honesty is your real value*. This interpretation is always made from a positive perspective, representing a strong motivation for those who complete the instrument to develop and strengthen their healthy lifestyles.

Given the lack of validated instruments in Portugal to measure preadolescents' lifestyles in the various areas relevant to health, the purpose of this study is to explore the research process involving the validation of instruments. Its main objective is to translate, adapt, and validate the FANTASTIC questionnaire in Portuguese preadolescents.

## Methodology

This methodological study involved the translation/back-translation and psychometric analysis of the FANTASTIC questionnaire. It is methodologically divided into four phases: translation, adaptation, pre-test, and exploratory study to assess the questionnaire's psychometric properties.

The translation process followed the methodological framework proposed by Ribeiro (2010), which includes: a) translation and back-translation; b) analysis of the versions (original, translation, and back-translation) to identify errors.

The initial translation was carried out independently by four people of Portuguese nationality, with fluent command of the Spanish language (each of them had lived at least six months in Spain). The analysis of the four versions resulted in a single consensus version.

Subsequently, the instrument was back-translated from Portuguese into Spanish by a person of Spanish nationality with fluent command of Portuguese. This new translation into Spanish was sent to the original scale's author, who had previously authorized the translation and adaptation of the scale. The original scale's author collaborated in the study and analyzed the semantic discrepancies between the original and back-translated versions.

The Portuguese version of the instrument was created based on the suggestions of the scale's author. This version was again analyzed by an expert panel using the Delphi technique and following the steps proposed by Mira et al. (2010).

The members of the expert panel were selected based on their professional and academic backgrounds. Priority was given to professionals from the areas of nutrition,

psychology, education, school health nursing, pediatric medicine, and nursing education (Table 1). The final version of the instrument (the Portuguese version with suggestions from the original scale's author) was sent to all members of the expert panel for independent analysis and feedback via email. Each member was asked to complete a brief survey about the translation, namely its pertinence, relevance, usefulness, wording, clarity, and layout, rating them on a scale from 1 to 5. In January 2019, an expert panel conducted an in-person analysis of the various suggestions for the cultural and linguistic adaptation of the FANTASTIC instrument at the Universidade Católica do Porto, and a new consensus version of the translation was obtained.

**Table 1**

*Composition of the Expert Panel*

| No. | Current workplace | University degree | Area of expertise |
|---|---|---|---|
| 1 | UCP | Ph.D. | University Nutrition Education |
| 2 | ARS Norte | Ph.D. | Psychology |
| 3 | College | Bachelor | Regular Education |
| 4 | ULS | Bachelor | School Health Nursing |
| 5 | Hospital CUF | Ph.D. | Pediatric Medicine |
| 6 | UCP | Ph.D. | University Nursing Education – CHP |
| 7 | UCP | Ph.D. | University Nursing Education – CHP |

*Note.* UCP = Universidade Católica Portuguesa; ARS = Regional Health Administration; ULS = Local Health Unit; Ph.D. = Doctor of Philosophy; CHP = Child Health and Pediatrics.

Finally, according to Ribeiro (2010), the translated and adapted version was pre-tested with students from three fifth-grade classes at a private school on the island of Madeira, after the authorization of the institution's director. Since the sample consisted of minors, the class directors sent each parent/guardian an information document and an informed consent form, which was signed and returned to the researchers.

In one class, the pre-test was applied during a computer class, and in the other two classes during a personal and social training class in a 45-minute lesson. In all classes, the class director and the researcher were present in the classroom.

Before filling out the instrument, the researcher explained the purpose of its application. Only those who had the informed consent signed by them and their parents/guardians could complete the instrument. The instrument was self-completed, anonymous, confidential, and performed using the Qualtrics software.

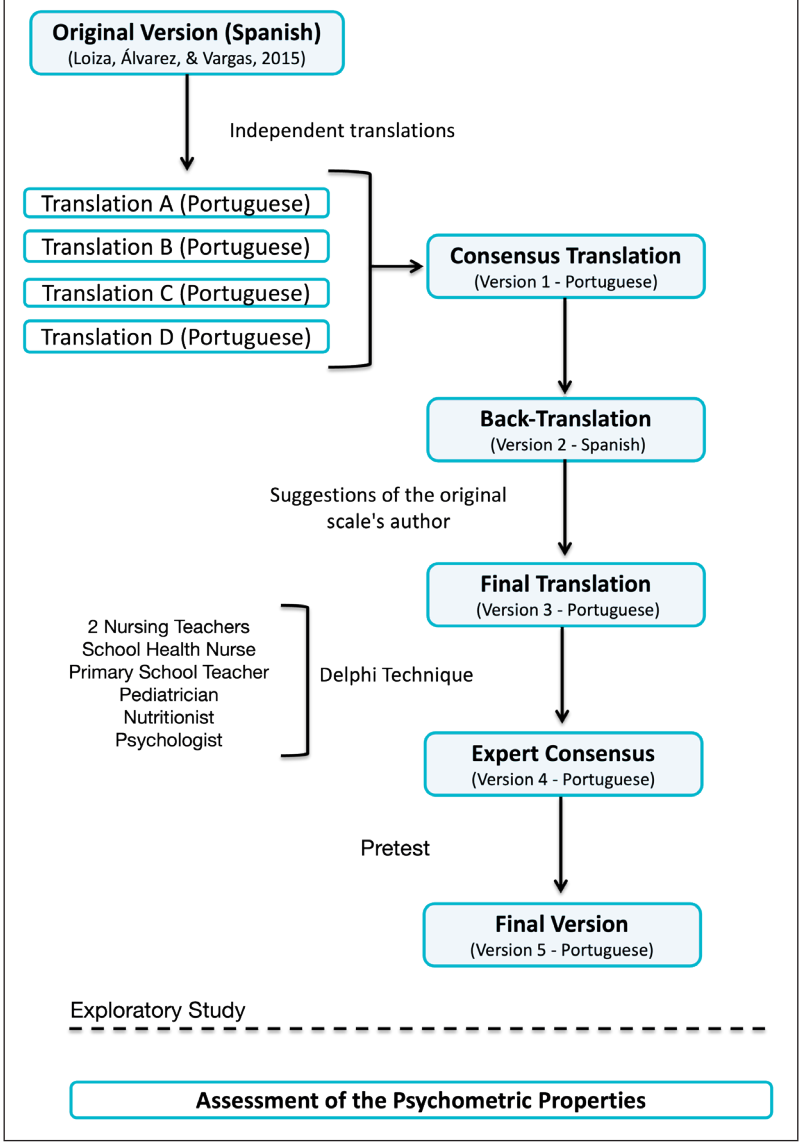
The pre-test was conducted at three different moments in the three classes. The instrument was adjusted between each class based on the doubts expressed by the participants. The instrument was applied in printed format in the last class to validate this alternative method.

Four fifth-grade classes from different schools in the archipelago of Madeira were selected using a random sample to assess the instrument's psychometric properties. The first classes from two rural and two urban schools were selected, as defined by the National Institute of Statistics. Before filling out the instrument, parents/guardians were asked to fill out the informed consent form. The instrument was self-completed in the classroom using a specific tool on the Qualtrics platform, with the presence of the researcher and each class director. After filling out the instrument, using predefined coding in the software, each participant was informed about their numerical score on the test, its meaning, and the recommendations for improving their lifestyles. The psychometric properties were analyzed using SPSS software, version 28.0.

The ethical aspects of this type of research were met throughout all stages of the research process. The following authorizations were obtained: Positive opinion from the Ethics Committee for Health of the Health Service of the Autonomous Region of Madeira; Authorization from the Regional Secretariat of Education of the Autonomous Region of Madeira; Authorization from the scale's author for the translation and validation process; Informed consent from the members of the expert panel and other participants in this study. The confidentiality and anonymity of the data collected during the pre-test and exploratory study were ensured. These steps are graphically organized in Figure 1.

**Figure 1**

*Methodology of the study of translation, adaptation, and validation of the instrument*




## Results

Specific results were obtained in each stage of the process of translation, adaptation, creation of the database, pre-testing, and development of the exploratory study.
Four different versions were obtained in the initial phase of the translation from Spanish into Portuguese. There were several semantic discrepancies in some questions. To obtain a consensus version, the researchers met to choose the translation of each question best suited for preadolescents.
The back-translation of the consensus version was sent to and carefully reviewed by the original scale's author. Overall, the author agreed with the translation and provided suggestions, especially at the semantic level, regarding questions 2, 4, 5, 11, 21, and 24. Based on these suggestions, the researchers developed the final version of the instrument.

### Adaptation – Delphi technique

In the adaptation process, the Delphi technique involved a panel of experts scientifically and professionally recognized by their curricula. Each of them gave their opinion on each item, focusing on the questions related to their professional areas.
In the assessment of the pertinence, relevance, usefulness, wording, and writing, all members of the expert panel scored above four points. Regarding clarity and layout, two members scored three points, and the remaining members scored more than four points.
The diversity of professionals allowed both an overall and specific reflection on the adaptation of the instrument to Portuguese preadolescents.
The expert panel gave several suggestions for a better understanding of the instrument by the target audience. There was a more intense semantic discussion about items 4, 5, 6, 7, 8, 10, and 17. Since item 6 includes a set of

recommendations for a balanced diet and one of the team members was a nutritionist, the discussion focused more on the content, and some adjustments were made based on the best available evidence.

The pre-test with fifth-grade students showed that the instrument is easy to complete. On average, the students took 15 to 20 minutes to complete the instrument. Only questions 12 and 16 were changed to improve item understanding.

In the exploratory study, the sample consisted of 170 children attending regular education in five schools of the archipelago of Madeira, after the consent of the child and the parents/guardians. Most respondents (52.40%) were boys aged 9 to 12, with the majority being 10 years old (77.10%).

Regarding preadolescents' lifestyles, the overall mean value was 90.11 ± 9.27 points, which falls in the category of 85-102 points, that is, *Very Good*.

No participant scored below 58 points: 8 (4.7%) scored *Fair* (47-72 points), 49 (28.8%) *Good* (73-84 points), 96 (56.5) *Very Good* (85-102 points), and 17 (10%) *Excellent* (103-120 points).

The adequacy of the database regarding the number of cases and its association with the number of variables was assessed. It corresponded to the minimum number of five cases per variable as described in the literature by Hair et al. (2016). Since the scale consists of 30 items, a minimum of 150 cases was required, a condition met in this study with 170 cases.

Item-total correlations were good, which resulted in a good Cronbach's alpha value (0.72). The analysis of item-total correlations and Cronbach's alpha values revealed that some items had low correlation; however, eliminating these items would not increase the alpha value to the point of justifying their elimination (Table 2). The reproducibility of the instrument was tested item by item, domain by domain, and considering the total score.

**Table 2**

*Description of the mean values, item-total correlations, and Cronbach's alpha if item deleted in the Portuguese version of the FANTASTIC questionnaire items*

| | Mean (*SD*) | Item-Total correlation (*N* = 170) | Cronbach's alpha if item deleted |
|---|---|---|---|
| Item 1 - F1 - I have someone to talk to about things that are important to me | 1.69 (0.547) | 0.334 | 0.711 |
| Item 2 - F2 - I give affection | 1.64 (0.481) | 0.441 | 0.705 |
| Item 3 - F3 - I receive affection | 1.64 (0.493) | 0.416 | 0.706 |
| Item 4 - A1 - I am a member of a group or organization (e.g., scouts, red cross, sports, religious, music, theater, or other youth groups) | 1.14 (0.879) | 0.175 | 0.728 |
| Item 5 - A2 - In the past week, I engaged in such vigorous physical activity for 30 minutes that I experienced a racing heart and felt tired | 1.05 (0.748) | 0.088 | 0.732 |
| Item 6 - N1 - I eat a balanced diet | 1.46 (0.511) | 0.212 | 0.719 |
| Item 7 - N2 - Every day, I have at least breakfast, lunch, and dinner | 1.88 (0.380) | 0.217 | 0.719 |
| Item 8 - N3 - I often eat excess sugar, salt, fat, sweets, and fast food (e.g., burgers, pizza, and chips) | 1.12 (0.464) | 0.168 | 0.721 |
| Item 9 - N4 - I weigh myself regularly | 1.04 (0.558) | 0.126 | 0.725 |
| Item 10 - T1 - I have tried smoking | 1.99 (0.153) | 0.088 | 0.724 |
| Item 11 - T2 - I have taken medications without prescription | 1.70 (0.497) | 0.146 | 0.723 |
| Item 12 - T3 - I drink caffeine-containing drinks (e.g., coffee, cola, or energy drinks | 1.81 (0.435) | 0.235 | 0.718 |
| Item 13 - A1 - I have consumed alcoholic beverages in the past 6 months (e.g., beer, wine, *sangria* or *poncha* [traditional drinks], shots) | 1.96 (0.199) | 0.122 | 0.723 |
| Item 14 - A2 - I think alcoholic beverages are harmful | 1.81 (0.522) | 0.161 | 0.722 |
| Item 15 - A3 - The people I live with drink alcoholic beverages | 1.26 (0.493) | 0.300 | 0.714 |
| Item 16 - S1 - I sleep well and feel rested | 1.45 (0.606) | 0.465 | 0.700 |
| Item 17 - S2 - I can deal with stressful situations and find solutions easily | 1.34 (0.532) | 0.174 | 0.721 |
| Item 18 - S3 - I relax and enjoy leisure time | 1.74 (0.442) | 0.393 | 0.709 |
| Item 19 - T1 - I get irritated or angry without reason | 1.49 (0.568) | 0.254 | 0.716 |
| Item 20 - T2 - I am in a good mood, happy and energetic | 1.51 (0.524) | 0.396 | 0.707 |
| Item 21 - T3 - I am satisfied with my studies | 1.54 (0.534) | 0.350 | 0.710 |
| Item 22 - T4 - I have felt pressured, physically assaulted, or verbally abused by my colleagues | 1.50 (0.568) | 0.144 | 0.724 |
| Item 23 - I1 - I am a positive or optimistic thinker | 1.48 (0.546) | 0.432 | 0.704 |
| Item 24 - I2 - I feel tense or uptight | 1.34 (0.510) | 0.213 | 0.719 |
| Item 25 - I3 - I feel sad or depressed | 1.34 (0.523) | 0.225 | 0.718 |
| Item 26 - C1 - I undergo health check-ups periodically (e.g., medical, nursing, nutrition, dental consultations) | 1.56 (0.543) | 0.378 | 0.708 |
| Item 27 - C2 - I talk to my family about sexuality | 0.52 (0.732) | 0.031 | 0.736 |
| Item 28 - C3 - I accept myself as I am, and I am satisfied with body image or how I see myself | 1.73 (0.508) | 0.349 | 0.710 |
| Item 29 - O1 - I can manage my day-to-day responsibilities | 1.46 (0.545) | 0.229 | 0.718 |
| Item 30 - O2 - I respect traffic rules (e.g., wear seatbelts, respect traffic lights, pedestrian crossings and bridges) | 1.87 (0.354) | 0.231 | 0.718 |

*Note. SD* = standard deviation; *n* = number of sampled individuals; F = Family and Friends; A = Physical and Social Activity; N = Nutrition; T = Toxics; A = Alcohol; S = Sleep and Stress; T = Type of Personality and Academic Satisfaction; I = Insight; C = Health Control and Sexuality; O = Order.

Table 3 shows that all correlations between the domains and the total score of the Portuguese version of the FANTASTIC questionnaire were positive and significant ($p < .01$). The values of the correlations confirm that they tend to measure the same construct, allowing for unidimensional interpretations.

**Table 3**

*Correlation between the domains and the total score of the Portuguese version of the FANTASTIC questionnaire*

| Domain | Total score (*N* = 170) | |
|---|---|---|
| | Pearson's correlation | Sig. (Two-tailed) |
| F - Family and Friends | 0.645 | < 0.001 |
| A - Physical and Social Activity | 0.384 | < 0.001 |
| N - Nutrition | 0.449 | < 0.001 |
| T - Toxics | 0.394 | < 0.001 |
| A - Alcohol | 0.448 | < 0.001 |
| S - Sleep and Stress | 0.650 | < 0.001 |
| T - Type of Personality and Academic Satisfaction | 0.624 | < 0.001 |
| I - Insight | 0.565 | < 0.001 |
| C - Health Control and Sexuality | 0.525 | < 0.001 |
| O - Order | 0.426 | < 0.001 |

*Note*. *N* = number of sampled individuals; Sig. = Significance.

## Discussion

Many measurement instruments have been developed in the health area. According to Nora et al. (2017), the high quality of the instruments developed worldwide often leads to studies on their translation and validation in different contexts. Therefore, translating, adapting, and validating instruments in different settings adds value to the work already developed and enhances the instrument. As Silva et al. (2014) describe, the FANTASTIC questionnaire is widely used worldwide in different contexts, whether for health promotion or prevention of complications from several diseases.

Its translation followed the recommendations in the most current evidence, namely the selection of independent translators with an excellent command of both languages (Portuguese and Spanish).

Since this translation focused more on literary-linguistic issues, the next step was performed using the Delphi technique, as mentioned by Moraes et al. (2018), which allowed the professionals involved to dialogue and build a consensus of consistent opinions about the issues under analysis based on their experience in specific areas.

As Nora et al. (2017) and Loiza et al. (2015) recommended, an expert panel was used to make the content of this instrument more robust and suitable to the intended target group.

The pre-test was essential in this research process to identify participants' doubts during completion. New adjustments were made to the questionnaire to minimize the difficulties in its application and facilitate the interviewees' understanding, thus increasing the efficiency and effectiveness of future studies.

With regard to preadolescents' lifestyles, the results of this study are very similar to those obtained in the validation study of the FANTASTIC questionnaire carried out by Silva et al. (2014) in Portuguese adults. The mean scores of the lifestyles in both samples were *Very Good*.

The final score of the instrument is automatically provided by the digital platform, creating an excellent dynamic for reflection on each participant's lifestyle in terms of community health. The participants automatically receive simplified information with recommendations toward more appropriate health behaviors based on their final scores. They receive predefined information about each area in the subscales, thus valuing not only the total score but also the various subscales. It marks the beginning of the intervention to improve participants' lifestyles, allowing them to identify their health status and receive guidance to improve their lifestyle.

The research process developed here was an excellent working tool capable of supporting a nursing intervention focused on the community empowerment model, with a view to carrying out a "conscious and intentional process of diagnosis and intervention to increase the power of communities" (Melo, 2020, p. 49).

The analysis of the total score of the lifestyles by levels of classification revealed that most children scored in the two intermediate levels between *Good* and *Very Good*, while Silva et al. (2014) found that most participants scored in the two higher levels between *Very Good* and *Excellent* (Table 4).

**Table 4**

*Comparison of Lifestyles*

| | FANTASTIC Preadolescents (n = 170) | FANTASTIC Adults (n = 707) |
|---|---|---|
| *Fair* (47 - 72 points) | 8 (4.7%) | 29 (4.1%) |
| *Good* (73 - 84 points) | 49 (28.8%) | 94 (13.3%) |
| *Very Good* (85 - 102 points) | 96 (56.5%) | 434 (61.4%) |
| *Excellent* (103 - 120 points) | 17 (10%) | 150 (21.2%) |

## Conclusion

This version of the FANTASTIC questionnaire adapted to preadolescents in Portugal is an excellent tool to diagnose (more or less healthy) lifestyles in this age group, showing excellent content validity and reliability.

The procedures used throughout this process allowed for a safe and coherent investigation based on the best evidence. The Delphi technique was a valuable resource throughout the process, namely through the participation of experts recognized in Portuguese academia in the different areas assessed by the instrument.

The exploratory study and the availability in a digital platform, which is an innovative aspect, revealed that the questionnaire is culturally adequate and easily understandable by the participants. The preadolescents described it as an easy and quick-to-use instrument.

This study has important implications for nursing theory, practice, and research because it provides scientific evidence for nurses to support their practices, namely health status assessment and intervention strategies using the FANTASTIC questionnaire.

One of the limitations of this study is the impossibility of performing a factor analysis during the validation process because it goes against the theoretical meaning predefined by the instrument.

Future studies should focus more on the interpretation of results, not only the final scores but also the scores of the subscales. It is also essential to invest in the interpretation of the recommendations provided based on the results obtained at the end of the questionnaire.

### Author contributions

Conceptualization: Rodrigues-Pires, F., Festas, C., Amado, J.

Data curation: Rodrigues-Pires, F., Almeida, S.

Methodology: Rodrigues-Pires, F., Festas, C., Amado, J.

Writing - original draft: Rodrigues-Pires, F., Festas, C., Amado, J.

Writing - review and editing: Rodrigues-Pires, F., Festas, C., Amado, J.

Creation and management of the online platform (Qualtrics): Neves-Amado, J.

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