An instrument calibrated by Item Response Theory to assess knowledge about head and neck cancer

Wanilda Maria Meira Costa Borghi1*, Marco Aurélio Borella Rodrigues1, Eder Ricardo Biasoli2, Maria Lucia Marçal Mazza Sundefeld2, Dalton Francisco Andrade3

Abstract

Introduction: Head and neck tumors are in the 9th place among the most frequent cancers in the world, being the incidence of 700,000 new cases per year. To suspect and to diagnose early the cancer implies to know well the subject. The questionnaire is a good instrument for measuring knowledge. Objective: To provide an item bank, calibrated by the Item Response Theory (IRT), to evaluate the “knowledge about head and neck cancer”, in any respondent, in order to benefit the studies on this construct, in the area of health education. Methods: To evaluate the “knowledge about head and neck cancer”, we started with a scale already calibrated by the IRT, with 24 items for schoolchildren (n = 2,006). A further 29 items of equal difficulty were created (n = 994 schoolchildren). Then, 60 new items, of equal construct and greater difficulty (n = 883 dentistry professionals) were incorporated into this scale. Results: The analysis of 2,847 responses resulted in a bank with 113 items on head and neck cancer calibrated by IRT and arranged on a skill scale. Conclusion: From this collection of items, different questionnaires can be set up according to the skill level of the respondent. The results of the evaluations, in single or distinct moments, can be compared since the items are on the same scale of ability.

Keywords: head and neck neoplasms; mouth neoplasms; questionnaires; knowledge; adolescents; dental surgeons; Item Response Theory (IRT).

Introduction

The head and neck tumors are in 9th place among the most frequent cancers in the world, being the incidence of 700,000 new cases per year and more prevalent in developing countries.1

They comprise the following anatomical regions: lip and mouth; pharynx (oropharynx, nasopharynx and hypopharynx); larynx; maxillary sinuses; nasal cavity and ethmoid sinuses; salivary glands and thyroid glands, with the most common cancer being squamous cell carcinoma – SCC.3-6

When neoplasm is detected early (early diagnosis), the prognosis is good, the treatment and rehabilitation of the patient becomes less complex, the patient's quality of life improves, and patient survival increases. Morbidity
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and mortality rates decrease, as does the risk of mutilation; however, 70% to 80% of head and neck tumors are discovered at an advanced stage of the disease\(^1\), even when located in a region of easy visual access, such as mouth cancer.

In Brazil, the estimate for each year of the biennium 2018-2019 is 11,200 new cases of oral cancer in men and 3,500 in women, being, respectively, the 5\(^{th}\) and 12\(^{th}\) most frequent among all cancers\(^7\).

In order for the doctor, dental surgeon and other health professionals to diagnose a cancer, in addition to understanding the subject, they must admit the possibility of this disease\(^1\). Measuring the knowledge of these professionals contributes to the strengthening of policies to combat cancer\(^8\)\(^-\)\(^{13}\).

The measurement of a latent trait, a characteristic not directly observable, is done indirectly, through the application of a questionnaire, a tool that allows to evaluate this ability. However, the process of creating this instrument is so complex and time-consuming that some studies even advocate exporting questionnaires to other cultures\(^14\)\(^-\)\(^{17}\).

Two theories are used to measure a latent trait for a given construct: the Classical Test Theory (CTT) and the Item Response Theory (IRT)\(^18\).

In Classical Theory of Tests the measure of a respondent’s latent trait is expressed by the total result: how many items the respondent hit in the test. In this theory, what is important is the test as a whole.

In Item Response Theory it is the item that signals the measure of the latent trait of the respondent: why the respondent hit or missed each individual item. In IRT, the important thing is the item itself.

One of the great advantages of IRT in relation to CTT is to allow the achievement of a scale where the items and individuals are positioned and interpreted in the context of the study. For this, it uses models, such as the three-parameter One-Dimensional Logistic Model, proposed by Bock & Zimowski\(^19\), in which the first parameter shows the discrimination index of the item; the second, the difficulty index of the item, which is measured on the same scale as the respondent’s latent trace, and the third parameter, the probability of correct response by chance\(^18,20,21\).

The evaluation of a certain construct requires the prior construction of a bank of items, a process that requires exhaustive scientific research, but constitutes the great richness of those who work with tests\(^18\).

Up to now, the “knowledge about head and neck cancer” is a construct that is little focused on databases, as an object of measurement.

Thus, the objective of this study is to provide an item bank, calibrated by IRT, to evaluate the “knowledge about head and neck cancer”, in order to benefit the studies about this construct in the area of health education.

**Methods**

In this research, 113 items were created to evaluate the “knowledge about head and neck cancer” using a sample consisting of 2,847 respondents, of which 883 were dental surgeons and the others, students of the 3\(^{rd}\) year of high school.
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All the students of the 3rd year of high school in the public schools of Araçatuba, SP who were present on the day of the application of the questionnaire, totaling 2,006 students, were included in the sample. The local Office of Education, after previous clarification on the purpose of this research, consented to the participation of the students.

As for dental surgeons, the sample consisted of volunteers who agreed to participate in the research, having signed the Free and Informed Consent Term (FICT), required by the Research Ethics Committee (REC).

This research was carried out in three steps:

**Step 1**: Starting from an existing questionnaire, composed of 24 items, to evaluate the construct “knowledge about head and neck cancer” in 1,012 students in the 3rd year of high school. In order to position, calibrate and validate these items through IRT, a scale was created. Therefore, these 24 initial items, with fixed parameters, constitute the reference group of this research22.

**Step 2**: In this research, 32 new items were created to evaluate the same construct “knowledge about head and neck cancer”, aimed at the same population: middle school students (n = 994). Then, these 32 items were incorporated into that initial scale, being also positioned in it23.

During the incorporation process, three items had to be eliminated because they were well above the respondents’ ability. We obtained, at this stage of the research, a scale, now with 53 items, with level equivalent to the 3rd year of High School.

**Step 3**: Subsequently, 68 new specific items on “head and neck cancer” were developed for dentistry professionals, with 95 students from the last years of the graduation and 746 dental surgeons, totaling 841 respondents.

These 68 items were incorporated into the 53 previous items, these being of lower level of knowledge than those. When there is incorporation of new items, of a higher level than the existing ones, the scale is enriched, improved, because the construct is the same14,24.

Of the total items created (121), eight could not be calibrated, because (also) they were well above the respondents’ ability. This research, therefore, generated an instrument composed of 113 items validated and calibrated by TRI, arranged, therefore, in that scale of proficiency, or scale of abilitie23.

This research was approved by the CEP of FOA - Unesp - CAAE Protocol no. 05556112.4.0000.5420 - Brazil Platform and follows the IRT model for several groups, in this case three groups, proposed by Bock & Zimowski19, which assumes that the greater the respondent’s proficiency, the greater his likelihood of success: a cumulative latent trait.

For the IRT analysis, the data were processed by the software Bilog-Mg for Windows, version 3.11.10.
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Results
This research generated a bank with 113 items (Figures 1-4) to evaluate the “knowledge about head and neck cancer” in any respondent (or group of respondents).

1) Do you know if mouth cancer exists?
   a. Yes
   b. No

2) Mouth cancer:
   a. Is not a disease
   b. Is a disease, but it is not transmitted from one person to another
   c. Is a disease and can be transmitted from one person to another

3) Cancer is due to:
   a. Abnormal growth of the cells
   b. Death of the cells
   c. Growth of the cells
   d. Lack of antibodies against foreign bodies
   e. Penetration of virus in the cells

4) At first, mouth cancer:
   a. Starts a lot
   b. Does not hurt

5) In your opinion, which of the symptoms below, have to do with mouth cancer?
   a. Difficulty in speaking
   b. Difficulty in chewing
   c. Difficulty in swallowing
   d. Rapid weight loss
   e. All of the above
   f. None of the above

6) For you, which of the following types of cancer occur more often in your country?
   a. Head
   b. Mouth
   c. Neck
   d. Lung

7) What is the main risk factor for mouth cancer?
   a. Drinking
   b. Solar exposure
   c. Smoking
   d. Virus

8) Among the risk factors, which is the association that increases the chances of having mouth cancer considerably?
   a. There is no dangerous association
   b. Solar exposure and alcohol
   c. Exposição solar e álcool
   d. Smoking and alcohol
   e. Tobacco and smoking
   f. Alcohol and virus

9) Do you think that smoking is harmful to your health?
   a. Yes
   b. No

10) Do you think that smoking near other people can be harmful to them?
    a. Yes
    b. No

11) Do you think that there is a safe amount for the use of cigarette?
    a. Yes
    b. No

12) How many chemical substances are there in a cigarette?
    a. One
    b. Three
    c. 150
    d. 1500
    e. Over 4000

13) What kind of skin do you think most influences the onset of cancer of the lip and face?
    a. Very pale skin
    b. Fair skin
    c. Dark skin
    d. All of the above

14) Do you think that your food can help prevent mouth cancer?
    a. Yes
    b. No

15) What kinds of food can help prevent mouth cancer?
    a. None
    b. Fruits and vegetables
    c. Cured meat
    d. Bread and pasta
    e. None of the above

16) For you, oral cancer occurs with greater frequency:
    a. Men
    b. Women

17) What is the incidence of mouth cancer in Brazil?
    a. 11 out of a hundred thousand inhabitants among men and 4 out of a hundred thousand inhabitants among women.
    b. 4 out of a hundred thousand inhabitants among men and 11 out of a hundred thousand inhabitants among women.
    c. 300 out of a hundred thousand inhabitants among men and 300 out of a hundred thousand inhabitants among women.
    d. 300 out of a hundred thousand inhabitants among men and 300 out of a hundred thousand inhabitants among women.

18) In which age group are most of the cases of mouth cancer diagnosed?
    a. Below 20 years old
    b. Between 20 and 30 years old
    c. Between 30 and 40 years old
    d. Between 40 and 60 years old
    e. Over 60 years old

19) Do you know what self-examination of the mouth is?
    a. Yes
    b. No

20) What do you need to do your mouth self-examination?
    a. A dentist’s tool
    b. Only a mirror and a well-lit place
    c. Someone to help

21) If you noticed any alteration in your mouth for more than fifteen days, what would you do?
    a. I wouldn’t worry about it
    b. I would apply some medication
    c. I would wait for a while for it to disappear
    d. I would go to see a doctor

22) What must be done to prevent mouth cancer? We must:
    a. Have a healthy diet
    b. No smoking
    c. Drink
    d. Protect yourself against the sun
    e. Follow all the procedures above

23) For you, mouth cancer: a. Is no cure, I will always suffer
    b. Can be cured but must be attentive and make up
    c. Can be cured and I can forget about this problem forever

24) Have you heard of any of the methods used for the treatment of cancer?
    a. Surgery
    b. Radiotherapy
    c. Chemotherapy
    d. Yes, all of the above
    e. Psychiatry
    f. None of the above

25) Is radiotherapy an important tool to fight malignant tumors?
    a. Yes
    b. No

26) Which animal is associated with the word cancer?
    a. Scorpion
    b. Fox
    c. Giant
    d. Crab

27) Who is the person who can, precociously detect the possibility of oral cancer?
    a. Doctor
    b. Dentist
    c. The person himself/herself
    d. All of the above
    e. Some

28) In the classification of malignant tumors, the letter T followed by a number, means:
    a. The size of a tumor
    b. Histotype of a tumor
    c. Temperature of a tumor
    d. Strain of adjacent muscles

29) Is cancer contagious?
    a. Yes
    b. No

30) Most of mouth cancers look like:
    a. Lump
    b. White patch
    c. Unhealed wound
    d. Red patch
    e. A sore spot in the mouth

31) Must patients treated for cancer have medical follow-up? Why?
    a. Yes, every patient must have follow-up
    b. Yes, they tend to have a second tumor
    c. No, these patients don’t need follow-up

32) After mouth cancer surgery, patients must be cared by:
    a. Physiotherapist
    b. Speech therapist
    c. Psychologist
    d. All of the above
    e. Medical treatment is enough

33) Carcinogenicity:
    a. Might result from multiple causes
    b. Starts with DNA damages
    c. Has only one cause
    d. None of the above
    e. A and b are correct

34) The risk factor for a disease is a condition that:
    a. Is associated with a disease
    b. It’s not a triggering factor
    c. Is associated with a disease and it is its triggering factor
    d. Although it’s not associated with a disease, it acts as a triggering factor

35) The statement: “Cancer is the second most common death cause, coming after heart disease”, is:
    a. True
    b. False

36) For you:
    a. Every tumor is malignant
    b. Every tumor is benign
    c. There are benign and malignant tumors
    d. There is no benign tumor

Figure 1. Presentation of items number 1 to 36.
Epidemiology

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On the other hand, in this research we do not intend to present the result referring to the volunteers who composed the sample: high school students and dental surgeons[^5][^13][^25][^28], but use the diversity of their answers, in the calibration process, for the positioning of the items in the “knowledge about head and neck cancer” scale[^20][^29][^30].

[^5]: Borghi et al. Arch Head Neck Surg. 2019;48(1):e00302018. DOI: 10.4322/ahns.2019.0005
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It is a (0,1) scale, in which zero(0) represents the mean and one(1) the standard deviation of the ability of the reference group: the first group of students of the 3rd year of high school.

68) The thickness of a tumor consists of:
   a. The horizontal measurement of a tumor
   b. The vertical measurement of a tumor
   c. None of the above

69) The regional dissemination of the oropharyngeal SCC is made by:
   a. Continuity
   b. Contiguity
   c. Lymphatic route
   d. Through the bloodstream
   e. None of the above

70) A gene can also be changed by the interaction of physical and genetic factors:
   a. Right
   b. Wrong

71) Radiotepathy does not have anti-inflammatory action:
   a. Right
   b. Wrong

72) About squamous cell carcinoma:
   a. It is the most common cancer of the head and neck, including tumors of the mucosa of the upper gastrointestinal tract
   b. It is the most common cancer of the head and neck, excluding tumors of the upper gastrointestinal tract mucosa
   c. It is not the most common within the head and neck area

73) Initial tumors of the greater salivary glands are characterized by:
   a. Skin involvement
   b. Involvement of mucosa and underlying tissue
   c. Lymphatic nodules
   d. Non-lymphatic nodules, solitary and painless
   e. None of the above

74) The diagnosis of leukoplakia by clinical examination:
   a. Is essential
   b. Is nonessential
   c. May be accidental

75) Elliptalplasia shows these characteristics:
   a. Very painful red patches
   b. Red color which stands out from normal mucosa
   c. Another of the above

76) Check the two tumors of vascular origin:
   a. Kaposi sarcoma, angieid chelitis
   b. Angiogenic granuloma, hemosiderosis
   c. Hemyangiomata, Kaposi sarcoma
   d. Angiogenic granuloma, toxoidetises
   e. Hemyangiomata, angieid chelitis

77) A gene can also be changed by the interaction of chemical and immunological factors:
   a. Right
   b. Wrong

78) After lower lip, oral cancer is more frequent on:
   a. Cheek and hard palate
   b. Tongue and soft palate
   c. Hard palate and floor of the mouth
   d. Floor of the mouth and tongue
   e. None of the above

79) In cases of suspected thyroid tumor:
   a. Should be performed fine needle biopsy should be avoided because the puncture false negatives are frequently
   b. Should be avoided because the puncture has been described implantation of carcinoma in needle path, even small-caliber
   c. None of the above

80) Biopsy is:
   a. A simple supplementary exam
   b. A complex supplementary exam
   c. A not a supplementary exam

81) Check the malignant neoplasms below:
   a. Adenoma
   b. Clamoloblastoma
   c. Adenocarcinoma
   d. Dendolomia
   e. Oncocytoma

82) The local spread of carcinomas of the UADT-upper aero digestive tract can be:
   a. Lymphatic, so treatment should be based on the local regional approach
   b. Lymphatic, so the treatment should not be based on the local regional approach
   c. Lymphaticomas of the upper aero digestive tract shows no lymphatic dissemination

83) It is common malignant tumors of the nasopharynx presenting cervical lymphadenopathy:
   a. Have cervical lymphadenopathy
   b. Has the patient’s complaint
   c. Have no cervical lymphadenopathy

84) About verrucous carcinoma:
   a. It has a better prognosis than squamous cell carcinoma grade I, II and III, regardless of the clinical stage
   b. It has a worse prognosis than squamous cell carcinoma grade I, II and III, regardless of the clinical stage
   c. It is diagnostic equal to grades I, II and III squamous cell carcinoma, independent of clinical staging

85) The diagnosis hypothesis of an oral lesion is:
   a. Carcinomas
   b. Physical examination
   c. Certainty of diagnosis
   d. The most likely diagnosis

86) Malignant tumors of the parotid gland, in more advanced stages, may show:
   a. Facial nerve paralysis and painful symptoms
   b. Facial paralysis of the hypoglossal nerve and painful symptoms
   c. Chiasmus
   d. Euline-ulcerated nodules

87) In the initial phase, ulcers of oral cancer are clinically very significant:
   a. Yes
   b. No

88) The lowest incidences of malignant tumors in the mouth are:
   a. Carcinoma, sarcoma, melanoma
   b. Squamous cell carcinoma, spinocellular carcinoma, sarcoma
   c. Melanomas, sarcoma, malignant tumors of the salivary glands
   d. Carcinomas, squamous cell carcinoma, salivary tumors of the salivary glands
   e. Osseorhom of tumor, spinocellular carcinoma, carcinoma of scardin cells

89) Dysplasia is a change diagnosed, especially:
   a. Clinically
   b. Histologically

90) Oropharyngeal neoplasm give metastasis, distance usually in the following body:
   a. Cheek
   b. Chin
   c. Tonge
   d. Throat
   e. Glottic sound
   f. Gastrostomy

91) What is the influence of time for the diagnosis and the beginning of the treatment over the survival of the patient with cancer?
   a. Clearly diagnosis, delayed treatment, longer survival
   b. Clearly diagnosis, delayed treatment, longer survival
   c. Clearly diagnosis and prompt treatment do not affect in survival time
   d. Clearly diagnosis and prompt treatment, longer survival
   e. Clearly diagnosis and prompt treatment, longer survival
   f. There is no relation with the survival time of the patient

92) The jaw may be partially resected (marginal mandibulotomy), in case of minimal invasion:
   a. Yes
   b. No

93) In entrolleucolesias injury, the most significant area is:
   a. The white area
   b. Red area
   c. Chiasm of the above

94) The returns in segment of patient with cancer of the mouth, should be performed:
   a. In 1 month by mouth in the first year and 2 in 2 months from the second to fourth year
   b. In 3 months for the first year and 2 in 2 months from the second to fourth year
   c. In 2 in 2 months in the first year and 6 in 6 months from the third to sixth year
   d. None of the above

95) Which treatment should be administrated given if there is cancer diagnosis and the patient is in final stage?
   a. Chemotherapy
   b. Radiotherapy
   c. Chemotherapy
   d. Support treatment
   e. There is no treatment

96) Exfoliative cytology is a procedure that can not be used in the diagnosis of suspected oral lesions:
   a. Right
   b. Wrong

97) In patients under treatment in head and neck cancer the oral communication with laryngeal voice comprises:
   a. Close of the laryngeal vibrator
   b. Oesophageal voice
   c. Cephaloeneuro-opharyngeal voice
   d. Cephaloeneuro-voice
   e. Oral speech - articulation sounds with mouth
   f. Ball of the above
   g. None of the above

98) The regional drainage of CEC can be taken by lymphatic chain:
   a. Mandibular
   b. Submental
   c. Submandibular
   d. Ball of the above
   e. None of the above

99) Clinically, oral cancers have similar growth and are all treated the same way:
   a. Right
   b. Wrong

Figure 3. Presentation of items number 68 to 99.
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The mean of the difficulty parameters of the items of the 3rd year of high school is 0.18 (average performance, close to zero level), and standard deviation 1.48, while the items directed to health professionals have mean 2.74 and standard deviation 1.21. This shows that the items vary greatly across the scale, making possible to place the respondents, on the same scale, with different items.

The items of this research were positioned between levels -3 and 6. (Figure 5).

The disposition of this bank of items can be better visualized in the scale of abilities of Table 1. This scale is fundamental for the choice of questions of greater or less complexity, according to the ability of the respondent.

Figure 4. Presentation of items number 100 to 113.
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![Figure 5. Distribution of the 113 items on the “head and neck cancer” construct in the skills scale. Araçatuba, SP - 2015.](image)

**Table 1.** Classification of the 113 items of the “head and neck cancer” construct, according to the level of difficulty. Araçatuba, SP - 2015.

| level | items |
|-------|-------|
| -3    | 1     |
| -2    | 10    | 9 | 11 | 25 |
| -1    | 23    | 21 | 36 | 29 | 14 | 4 | 35 |
| 0     | 43    | 52 | 15 | 6  | 22 | 55 | 7  | 16 | 26 | 91 | 37 | 48 | 12 |
| 1     | 40    | 47 | 39 | 20 | 13 | 34 | 81 | 46 | 31 | 2  | 58 | 41 | 44 | 53 | 28 | 99 | 54 | 74 | 5  |
| 2     | 106   | 24 | 42 | 101| 65 | 8  | 85 | 57 | 108| 32 | 63 | 95 | 3  | 70 | 51 | 33 | 30 | 19 | 78 | 89 | 56 | 80 |
| 3     | 77    | 49 | 27 | 62 | 105| 64 | 59 | 75 | 45 | 96 | 76 | 60 | 86 | 17 | 18 | 104| 103| 69 | 92 |
| 4     | 102   | 72 | 113| 67 | 111| 82 | 61 | 110| 107| 73 | 90 | 100| 66 | 112| 83 | 50 | 109|
| 5     | 98    | 71 | 97 | 38 | 87 | 84 |
| 6     | 88    | 94 | 93 | 68 | 79 |

**Discussion**

The construction of an item bank requires laborious scientific research and time-consuming, thus besides the creation of the items for a particular psychological process, it is necessary to demonstrate its psychometric quality, which is the calibration, and also to validate the items. To validate means to establish the legitimate adequacy between what is to be measured and its physical representation, which is the behavior, the item. Validity is, therefore, what gives the item the characteristic of good item\textsuperscript{18}.
In the social sciences, the measurement process is complex, because a psychological, subjective, intangible variable is not directly observable, like most physical variables\textsuperscript{14,18}.

An instrument can only be considered valid if it is capable of adequately capture one pre-specified underlying concept\textsuperscript{21,30}.

The questionnaire is a good instrument for measuring knowledge, and can be calibrated by IRT, a type of measure that starts from a secondary, observable reality, which is the behavior, the response, the item; to end up at a hypothetical, unobservable reality, which is the latent trait\textsuperscript{14,28}.

In the calibration process, the TRI positions the items in a same metric, which is the scale of the latent trace. With the items calibrated we obtain the measure of the latent trait for each one of the respondents in the same metric\textsuperscript{18,20,24}.

The criterion of positioning of the item on a certain level of the scale is based on probability\textsuperscript{17,20}. However, this probability is not 100%, but around 65% and, at the same time, the respondent’s domain on the previous level must be below of 50%. So the person who is positioned on a level has a high probability of dominate the items on that level and the items from previous levels (because the model is cumulative), but should not dominate items from posterior levels.

As in a language proficiency test, the skill scale generated in this research is a proficiency scale for the “head and neck cancer” construct. In this way, the person who is positioned at level -3, the 1\textsuperscript{st} in Table 1, is able to correctly answer only item 1: “Do you know if there is cancer of the mouth?” This is the item that requires the lowest level of ability, among all others created in this research; while the person who is positioned at level -2 should know how to respond if radiotherapy is important to fight malignant tumors (item 25), if the act of smoking only affects the smoker (item 9), or also near him (item 10); if there are safe doses for the use of cigarettes (item 11); and also to the previous level item, which, in this case, is item 1. The person who is at level 3, will be able to respond to specific items, such as definition of carcinoma in situ, (item 59), exfoliative cytology (item 96), alteration of genes (items 77 and 105), among others, but will not be able to respond much more specific items, such as level 5: regional drainage of CPB (item 98), alaringeal voice (item 97), whereas the individual positioned at level 6, which requires a greater degree of ability of the respondent, will not only have the ability to respond correctly to the malignant tumors that present the smallest incidences in the mouth(item 88), but also to all items of the scale, once that all other items are prior to this level.

It can be seen, therefore, by the scale of abilities of this research, that at levels below zero, and especially close to zero, there really is a predominance of people with ability to respond to items related to risk factors for cancer mouth, going to level 1, from which, the questions already address cancerous lesions, treatment methods for head and neck cancer, among other concepts, which gradually become more specific.
This means that, although this metric was built based on a 3\textsuperscript{rd} year high school population, and another population with dental professionals, the great majority of the items that make up it can be applied to anyone with these levels (medium or higher), since this generated skill scale, if correctly interpreted, can level any respondent; because in TRI, an item measures certain knowledge, regardless of who is responding to it\textsuperscript{20,24,29}. Items that measure specific knowledge discussed only in higher education should not be presented to high school respondents. For instance, item 61: Is sialorrhea a side effect of radiation therapy?

Since IRT focuses on the item rather than on the test as a whole, from the valid items database, produced and made available in this research, different questionnaires (tests) can be built, for different skill levels: “tailor-made tests”, with the great advantage of being able to compare the results of these assessments. In addition, since a warehouse (bank) of items is in continuous formation, this bank of items can be expanded by IRT to evaluate this same construct\textsuperscript{15,20,21}.

**Conclusion**

This work presents a bank of items to evaluate “knowledge about head and neck cancer”.

Although a construct can not be exhausted in its semantic fullness, this bank of items can be very useful, since from it, different questionnaires can be elaborated, for different moments, as it is the case of the initial and final evaluations of educational programs, as well as allowing for different tests for the same moment, since the items, because they are all on the same scale of ability, have an isonomic character.

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