



# Design and validation of questionnaires to measure educational needs about medications in students, parents, and teachers in an elementary school

[Diseño y validación de cuestionarios para medir necesidades educativas sobre medicamentos en alumnos, padres y profesores en una escuela primaria]

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## Abstract

**Context:** To achieve a health literacy program aimed at improving the use of medicines, it is necessary to have tools that identify educational needs through valid and reliable instruments.

**Aims:** To validate instruments designed to evaluate the correct use of medicines in an elementary school in the state of Hidalgo, Mexico, applying the Delphi method.

**Methods:** A descriptive, mixed study was carried out. Three questionnaires were designed based on a documentary analysis and the identification of influential variables expressed in dimensions and items, such as sociodemographic, pharmacotherapeutic, and clinical characteristics. The content validity was determined by applying the Delphi method, the mathematical model of Torgerson (MMT), and Aiken's *v* coefficient, while the internal reliability was determined by Cronbach's alpha value and the interobserver concordance by the Kappa index.

**Results:** Three questionnaires were designed with 33, 48, and 44 items addressed to students, parents, and teachers respectively. The content was valid meeting the MMT criteria and Aiken's *v* values above 0.9. Reliability was moderate with Cronbach's alpha values of 0.6 and inter-observer agreement was moderate with Kappa index values of 0.4. Reliability and concordance values are accepted when considering the literature review and rigorous expert input.

**Conclusions:** The designed questionnaires contain valid and reliable items that will allow obtaining the necessary information to build an education program of medication use in an elementary school considering the integration of students, parents, and teachers.

**Keywords:** health literacy; knowledge; medicines; questionnaires; rational use medicines; validation.

## Resumen

**Contexto:** Para lograr un programa de alfabetización en salud dirigido a mejorar el uso de los medicamentos es necesario disponer de herramientas que identifiquen las necesidades educativas a través de instrumentos válidos y fiables.

**Objetivos:** Validar instrumentos diseñados para evaluar el uso correcto de los medicamentos en una escuela primaria del estado de Hidalgo, México, aplicando el método Delphi.

**Métodos:** Se realizó un estudio descriptivo, mixto. Se diseñaron tres cuestionarios a partir de un análisis documental y la identificación de variables de influencia expresadas en dimensiones e ítems, tales como características sociodemográficas, farmacoterapéuticas y clínicas. La validez de contenido se determinó aplicando el método Delphi, el modelo matemático de Torgerson (MMT) y el coeficiente *v* de Aiken; en tanto que la confiabilidad interna a través del valor de alfa de Cronbach y la concordancia interobservadores por el índice Kappa.

**Resultados:** Se diseñaron tres cuestionarios con 33, 48 y 44 ítems dirigidos a alumnos, padres y profesores respectivamente. El contenido fue válido cumpliendo los criterios del MMT y valores de *v* de Aiken superiores a 0.9. La fiabilidad fue moderada con valores de alfa de Cronbach de 0.6 y la concordancia entre observadores moderada con valores de índice Kappa de 0.4. Se aceptan los valores de fiabilidad y concordancia al considerar la revisión bibliográfica y las aportaciones rigurosas de los expertos.

**Conclusiones:** Los cuestionarios diseñados contienen ítems válidos y fiables que permitirán obtener la información necesaria para construir un programa de educación del uso de medicamentos en una escuela primaria considerando la integración de alumnos, padres y profesores.

**Palabras Clave:** alfabetización en salud; conocimiento; cuestionarios; uso racional de medicamentos; validación.

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## INTRODUCTION

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There is scientific evidence that more than 50% of the drugs used in the treatment and prevention of diseases are prescribed, dispensed, or sold incorrectly; the World Health Organization has exposed that "*no matter how effective and safe a product is intrinsic, it can only fulfill its function if it is used correctly*" (WHO, 2006); to achieve its correct use there must be a balance between four basic objectives: maximizing its effect, minimizing risk and cost, and considering the patient's opinion; poor knowledge of medications can lead to serious consequences, such as lack of adherence and misunderstanding of the importance of adverse effects (Poudel and Nisel, 2018).

García-Delgado et al. (2009) suggested the definition of medication knowledge as "*the information acquired by the patient about the medication, what is needed to use it correctly, to know the therapeutic purpose and efficacy, as well as, dosage, form of administration, duration of treatment, safety, side effects, contraindications, interactions, and conservation-storage*". The most basic approach to deliver health-related messages or to improve people's existing health knowledge and practices is the implementation of an educational or counseling intervention at the individual level (Poudel and Nisel, 2018).

In this sense, the literature has pointed out that for an educational intervention to be successful it must be based on educational needs and on a diagnosis of sociodemographic, pharmacotherapeutic, and clinical factors that modulate the role of medications as a health need; for this it is necessary to develop measurement instruments that allow obtaining the information in a reliable manner (Keszei et al., 2010).

Currently, instruments to measure knowledge about medicines targeting the child population are scarce and do not start from the cultural context in which they develop; focusing on children for health education remains critical, as children represent an important part of the world's population and because they influence the attitudes and behaviors of adults, including their parents and teachers (Charry and Parguel, 2019). Thus, children are described as "agents of change" capable of providing information about health, disease treatment, and medication use (Burrows, 2017). If it is considered that schools, together with the home, are the key socializing environments where the development of people in their early ages takes place, then both spaces are conducive to shaping the behavior and social values of childhood and adolescence (Lorente, 2013).

Although there are several publications of studies on the validation of questionnaires, most are aimed at determining the degree of knowledge of disease (Kumar et al., 2022; Park, 2021), bio-psychosocial aspects, and health (Makivić and Klemenc, 2022), few researchers have directed their studies towards the development and validation of questionnaires to measure the degree of knowledge towards medicines in the general population (García Delgado et al., 2009; Kumari et al., 2021; Makki et al., 2021; Mallah et al., 2020; Mirković et al., 2017), few towards children (Aramburuzabala, 1995; Ramzan et al., 2014) and parents (Halim et al., 2009) and null for teachers as well as for the three sectors of the population as a whole.

Therefore, to respond to the theoretical approaches and the available empirical evidence of valid and reliable questionnaires, the aim of present study was proposed to design and validate three questionnaires using the Delphi methodology to identify sufficient educational needs to support the development of programs to promote the use of medicines.

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## MATERIAL AND METHODS

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### Design, setting and participants

A descriptive, sequential mixed methodology research design was carried out in two stages: the qualitative stage for the development of the questionnaire and the quantitative stage for the validation of the questionnaire. The study was conducted in the period January-September 2021 in the elementary school of the municipality of Huasca de Ocampo in the State of Hidalgo, Mexico. Fifty-seven students, fifty-one parents, and nine teachers were interviewed.

### Ethical considerations

The selected participants were informed about the objective, development, and scope of the research project, guaranteeing them anonymity, the confidentiality of the data collected, that their participation was voluntary, that they could withdraw from participation at any time and that it would not affect their situation or that of their child at the elementary school; in the case of the children, they were informed that they could refuse even though their parents had authorized their participation. All participants who agreed to participate were asked to sign an informed consent form; in the case of the children, it was an informed assent. This research protocol was reviewed and approved by the Ethics and Research Committee of the Autonomous University of the State of Mexico (UAEM) to ensure that the work was conducted in

accordance with institutional standards (approval ID: RP.UAEM.ERC.153.2020).

### Procedure

Three phases were identified for the development of the questionnaires (Benson and Clark, 1982): Phase 1, planning; Phase 2, construction; and Phase 3, evaluation, and validation.

#### *Phase 1: Planning*

The purpose of the planned instruments was formulated and included the specification of the construct (knowledge) to be measured and the target group to be addressed; a documentary analysis was performed by consulting updated literature using search engines such as Scopus, Science Direct, PubMed to obtain existing evidence on the design of questionnaires in health, knowledge of medicines and rational use of medicines. The keywords used were: "design AND validation"; knowledge; medicines; schoolchildren; parents and teachers.

#### *Phase 2: Construction*

Once the objectives, domains, and population were established, the formulation of the items began, choosing multiple-choice questions, in some cases open-ended questions, and grouping them into domains. The wording was familiar to each target group, taking care to ensure clarity, precision, and logical structure to adequately represent the construct of the questionnaire.

#### *Phase 3: Evaluation and validation*

It was carried out through expert consensus using the Delphi method; to determine the group of experts it was considered that: a) they should be specialists in health sciences and/or pharmaceutical sciences, with a Master's or Doctorate degree; b) experience in health education activities; c) obtain a competence coefficient greater than 0.85 (Jaam et al., 2022).

Each of the selected experts was sent a form to rate each item of the questionnaire according to the relevance of the content, using Moriyama's criteria. Each item was evaluated based on the following criteria: reasonable and understandable; sensitive to variations in the phenomenon being measured; with justifiable and intuitively reasonable basic assumptions; with clearly defined components. A Likert-type scale was used to evaluate the questionnaires, establishing the following categories: very adequate (5), quite adequate (4), adequate (3), not very adequate (2), and inadequate (1) (Moriyama, 1968).

Two Delphi rounds were conducted with 13 experts, and the results of each round were analyzed

using Torgerson's model and Aiken's concordance index  $v$  was used to determine content validity (García-Ruiz and Lena-Acebo, 2018). The acceptance criteria for each item were: coefficient of variation in the responses equal to or less than 0.3, means of the ratings assigned by the experts equal to or greater than 3.5; and percentage of experts who rated each indicator with a value of 4 ("quite adequate" category) or 5 ("very adequate" category) greater than 50%. The Aiken's  $v$  coefficient value for acceptance was greater than 0.90 with a confidence level of 95%. In addition, the recommendations of the expert panel were taken into consideration when revising some of the words and phrases in the items. The evaluation and changes made during the Delphi process are available upon request to the authors.

The final questionnaires were administered to 57 students, 51 parents, and 9 teachers at an elementary school in the State of Hidalgo, Mexico, with their informed consent and assent; the sample size was determined by simple random sampling, for discrete data and finite population for a 95 percent confidence level.

Reliability was assessed through internal consistency (Cronbach's alpha) and inter-observer agreement (Kappa index).

Through the calculation of Cronbach's alpha coefficient, the existing correlation between the items was estimated and those that were inconsistent or that measured the same attribute were identified; Cronbach's alpha coefficient was classified according to the following limits (Tavakol and Dennick, 2011):

Very low reliability:  $\alpha \leq 0.30$ ; low reliability:  $0.30 < \alpha \leq 0.60$ ; moderate reliability:  $0.60 < \alpha \leq 0.75$ ; high reliability:  $0.75 < \alpha \leq 0.90$ ; and very high reliability:  $\alpha > 0.90$ .

For the evaluation of interobserver agreement, the Fleiss kappa coefficient was calculated for five evaluators, who administered the questionnaires independently (DeVellis, 2005). Statistical significance was calculated for the overall Kappa and classified according to the following:

Kappa  $> 0.20$  poor concordance; Kappa between 0.21-0.40 weak; Kappa between 0.41-0.60 moderate; Kappa between 0.61-0.80 good; and Kappa between 0.81-1.00 very good.

### Statistical analysis

For the calculation of the indicators of Torgerson's mathematical model as well as the calculation of Aiken's  $v$ , the Excel program was used. The SPSS v 29.0 statistical program was used to calculate Cronbach's alpha and the Kappa index.

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## RESULTS

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### Planning

After the literature review, no validated questionnaires were found that measured the degree of knowledge about medications in children, parents, and teachers and that included influential variables such as sociodemographic, pharmacotherapeutic, and clinical characteristics to be able to have a global diagnosis of educational needs to design an educational intervention. A few publications were found, the first aimed at validating the translation of a medical knowledge questionnaire for school-aged children (Ramzan, 2014), the second on the study of the perception and consumption of medicines in childhood before a health education program (Aramburuzabala, 1995) and the last one to measure the use of medicines by parents for their children (Halim et al., 2009).

The dimensions identified to measure the use of medicines were: form of administration, interactions, side effects, conservation, indication, duration of treatment (García-Delgado et al., 2009; Halim et al., 2009); expiration dates of medicines and their disposal (Makki et al., 2021); sociodemographic variables (Makki et al., 2021; Ramzan et al., 2014); safe use of medicinal plants (Mirković et al., 2017); knowledge, attitudes, consumption, and autonomy in decisions in the face of a disease (Aramburuzabala, 1995; Mallah et al., 2020).

### Construction

The structure, content, and dimensions of the questionnaires were developed based on a categorization matrix including the theory on medication use that considers the factors that determine this condition (WHO, 2006).

Table 1 shows the dimensions and items for the initial and final questionnaires obtained in the second round by expert reviewers, showing a decrease in the number of items after the content validity analysis.

The validated questionnaires are available in the Annex 1: Table S1. Questionnaire for interviewing students; Table S2. Questionnaire for interviewing parents; and Table S3. Questionnaire for interviewing teachers.

### Evaluation and validation

To select valid and reliable items, the Delphi method was used in two rounds of consultation with 13 experts, specialists in pharmaceutical sciences, with master's degrees ( $n = 7$ ) and doctorate ( $n = 6$ ), with experience in teaching Pharmaceutical Care and Health Education and with an average competence

coefficient of 0.95, so they had a high degree of competence.

The experts made several observations: For the student questionnaire, they suggested eliminating data that would allow the identification of the participants, thus maintaining their anonymity, as well as eliminating the address and data on the father or mother; for the clinical variables, three items related to family history were eliminated to avoid memory bias on the part of the students; for the dimension of the level of autonomy, three items related to going alone to stores or pharmacies to buy medicines were merged, as well as data on the date on which they had consumed medicines without adult supervision. The dimension of knowledge of medications was restructured to group the criteria for its evaluation into therapeutic objective, use, safety, conservation, and disposal; in addition to suggesting the categories established for its evaluation:

Optimal knowledge: to those who obtain more than 15 points; sufficient knowledge: those who obtain 10 to 14 points; insufficient knowledge: those who obtain 5 to 9 points; and no knowledge: those who score less than 4 points.

For the instrument directed to parents, the observations of general data and sociodemographic variables were similar, the term "guardian" was added to consider all persons responsible for the student; in the domains of pharmacotherapeutic and clinical variables, the items were reorganized to identify non-useful medications kept at home as well as family history data to avoid memory bias; the dimension of knowledge of medications was restructured in the same way as in the case of children.

The instrument directed to teachers had a substantial change in the reorganization of the items to identify clinical variables to reduce them to the diseases or symptoms presented by the students exclusively during the class; the dimension of knowledge of medications was restructured in the same way as in the case of children.

Tables 2, 3, and 4 show the results obtained from the content validity analysis for each of the items of the student, parent, and teacher questionnaires by applying the criteria of Torgerson's mathematical model and the calculation of Aiken's  $v$ . As can be seen, 100% of the items of the three questionnaires met the criteria of Torgerson's Method.

As can be seen, 100% of the items of the three questionnaires met the criteria of Torgerson's method, and Aiken's  $v$  value for the student, parent and teacher questionnaires is greater than 0.94, so they are classified as very adequate to integrate the final version.

Table 5 presents Cronbach's alpha internal consistency index values as well as the overall weighted Kappa index obtained for the items of the three questionnaires.

**Table 1.** Evolution of the instruments in the validation.

Group	Initial design Dimension	Items	Final design Dimension	Items
<b>Students</b>	General data	4	General data	1
	Sociodemographic variables	4	Sociodemographic variables	4
	Clinical variables	6	Clinical variables	3
	Autonomy level	10	Autonomy level	6
	Knowledge of medications	21	Knowledge of medications	19
	TOTAL	<b>45</b>	TOTAL	<b>33</b>
<b>Parents</b>	General data	2	General data	1
	Sociodemographic variables	15	Sociodemographic variables	12
	Pharmacotherapeutic variables	12	Pharmacotherapeutic variables	12
	Clinical variables	11	Clinical variables	7
	Knowledge of medications	17	Knowledge of medications	16
	TOTAL	<b>57</b>	TOTAL	<b>48</b>
<b>Teachers</b>	General data	5	General data	4
	Sociodemographic variables	7	Sociodemographic variables	6
	Didactic resources	7	Didactic resources	7
	Pharmacotherapeutic variables	11	Pharmacotherapeutic variables	9
	Clinical variables	14	Clinical variables	2
	Knowledge of medications	17	Knowledge of medications	16
TOTAL	<b>61</b>	TOTAL	<b>44</b>	

Source: Data taken from the data collection form

## DISCUSSION

The use of medications has increased in recent years, including among children. Aramburuzabala (1995) pointed out that several factors influence the inappropriate use of medications in childhood, among which are the scarce knowledge that parents have about medications, the lack of knowledge about the consequences of medications in childhood, the problem of pediatric prescriptions due to the variability of children's responses to medications and the risk of poisoning due to medication consumption; suggesting the participation of parents, health professionals, manufacturers and considering their cultural, social, family and educational environment. If it is considered that schools, together with the home, are the key socializing environments where the development of people in their early ages takes place, then both spaces are conducive to shaping the behavior and social values of childhood and adolescence (Lorente, 2013); and that as children grow up, they become independent users of medicines, then it is important to teach them how to use medicines safely

and correctly and how to avoid harm from their misuse (Hämeen-Anttila and Bush, 2008). However, carrying out an educational intervention requires a diagnosis of educational needs, and this requires valid and reliable measurement instruments.

The literature review made it possible to identify the lack of publications on validated instruments aimed at the child population, parents, and teachers, which, as has been seen, can be facilitators in the transmission of health-related information, including medications. In the few studies published, it was possible to recognize the dimensions, with coincidences in sociodemographic variables, aspects of conservation, indication, and even elimination of medicines, so the dimensions that were considered for the design of the instruments of this research are in line with the proposed redefinition of the "Rational Use of Medicines" in which the philosophy of One-Health is included, which would be "*The rational use of medicines requires that patients receive medicines appropriate to their clinical needs, in doses that meet their requirements for an adequate period and at the lowest cost to them and their*

**Table 2.** Results of the content validity analysis in students.

DIMENSIONS	No item	Mean $\pm$ SD	Coefficient of variation	Acceptance (%)	Cohort points	Criterion Torgerson	V for Aiken
<b>I.- General data</b>	1	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
<b>II.- Sociodemographic variables</b>	1	4.96 $\pm$ 0.14	0.03	100.00	0.60667	QA	0.99
	2	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	3	4.98 $\pm$ 0.07	0.01	100.00	0.65334	QA	1.00
	4	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
<b>III.- Clinical variables</b>	1	4.85 $\pm$ 0.41	0.08	98.08	0.43928	QA	0.96
	2	4.83 $\pm$ 0.52	0.11	96.15	0.35509	QA	0.96
	3	4.90 $\pm$ 0.26	0.05	100.00	0.54174	QA	0.98
<b>IV.- Autonomy level</b>	1	4.83 $\pm$ 0.43	0.09	94.23	0.43014	QA	0.96
	2	4.77 $\pm$ 0.49	0.10	96.15	0.37346	QA	0.94
	3	4.87 $\pm$ 0.38	0.08	96.15	0.44841	QA	0.97
	4	4.92 $\pm$ 0.28	0.06	98.08	0.51335	QA	0.98
	5	4.81 $\pm$ 0.69	0.14	92.31	0.23337	VA	0.95
	6	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
<b>V.- Knowledge of medications</b>	1	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	2	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	3	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	4	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	5	4.92 $\pm$ 0.28	0.06	96.15	0.51335	QA	0.98
	6	4.96 $\pm$ 0.14	0.03	100.00	0.60667	QA	0.99
	7	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	8	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	9	4.56 $\pm$ 1.09	0.24	84.62	0.00203	VA	0.89
	10	4.92 $\pm$ 0.28	0.06	100.00	0.51335	QA	0.98
	11	4.71 $\pm$ 0.74	0.16	92.31	0.19044	VA	0.93
	12	4.90 $\pm$ 0.35	0.07	98.08	0.46668	QA	0.98
	13	4.81 $\pm$ 0.47	0.10	96.15	0.38623	QA	0.95
	14	4.92 $\pm$ 0.28	0.06	100.00	0.51335	QA	0.98
	15	4.79 $\pm$ 0.47	0.10	96.15	0.41462	QA	0.95
	16	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	17	4.90 $\pm$ 0.35	0.07	98.08	0.46668	QA	0.98
	18	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	19	4.88 $\pm$ 0.42	0.09	96.15	0.42002	QA	0.97

Source: Data taken from the data collection form. Torgerson criteria: very adequate (VA), quite adequate (QA), adequate (A), not very adequate (NA) and inadequate (I).

community, taking into account the interconnection between people, animals, plants and their shared environment" (Orive et al., 2021).

The instruments designed included five dimensions for students and parents, as well as six for teachers, with common aspects for all three, such as

general data, sociodemographic variables, clinical variables, and knowledge of medications, with a difference in the students' level of autonomy, in the case of parents pharmacotherapeutic variables and in the case of teachers, didactic resources.

Given that children are considered active participants in the use of medications, capable of providing information to their parents, and that there can be no autonomous behaviors in a person if they are not based on rational knowledge, it is necessary to identify their autonomy to avoid the persistence of irrational behaviors in the consumption of medications (Aramburuzabala, 1995; Burrows, 2017).

For the case of parents, it was considered to include the review of the medications they keep at home, under the premise that accumulation is among the causes of irrational use of medications, assuming that the successful practice towards the use, storage, and disposal of medications is influenced by their knowledge and attitudes (Makki et al., 2021).

Considering that schools play an important role in the well-being of students, families and the community in general, then they can be the bridge for the transfer of information between children and their families, with the clear purpose of improving their behaviors and behaviors, so the school is considered as the ideal environment for health education in general and specifically in the use of medicines. Therefore, teachers can be co-participants in the educational interventions that are developed, so it was necessary to include aspects related to their training in health education and didactic resources since they will be a fundamental part in the success of the interventions, as demonstrated by a study in Nigeria where it was concluded that teachers can be considered as informal agents for health education (Ekeh and Adeniyi, 1985).

**Table 3.** Results of the content validity analysis in parents.

DIMENSIONS	No item	Mean $\pm$ SD	Coefficient of variation	Acceptance (%)	Cohort points	Criterion Torgerson	V for Aiken
<b>I.- General data</b>	1	4.88 $\pm$ 0.33	0.07	100.00	0.49508	QA	0.97
<b>II.- Sociodemographic variables</b>	1	4.96 $\pm$ 0.14	0.03	100.00	0.60667	QA	0.99
	2	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	3	4.87 $\pm$ 0.38	0.08	98.08	0.44841	QA	0.97
	4	4.75 $\pm$ 0.63	0.13	90.38	0.28652	QA	0.94
	5	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	6	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	7	4.94 $\pm$ 0.21	0.04	98.08	0.56001	QA	0.99
	8	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	9	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	10	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	11	4.90 $\pm$ 0.35	0.07	96.15	0.46668	QA	0.98
	12	4.98 $\pm$ 0.07	0.01	100.00	0.65334	QA	1.00
<b>III.- Pharmacotherapeutic variables</b>	1	4.88 $\pm$ 0.42	0.09	96.15	0.42002	QA	0.97
	2	4.77 $\pm$ 0.83	0.17	92.31	0.14004	VA	0.94
	3	4.77 $\pm$ 0.83	0.17	92.31	0.14004	VA	0.94
	4	4.92 $\pm$ 0.28	0.06	100.00	0.51335	QA	0.98
	5	4.92 $\pm$ 0.28	0.06	100.00	0.51335	QA	0.98
	6	4.65 $\pm$ 0.98	0.21	88.46	0.08523	VA	0.91
	7	4.85 $\pm$ 0.55	0.11	92.31	0.32669	QA	0.96
	8	4.92 $\pm$ 0.28	0.06	100.00	0.51335	QA	0.98
	9	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	10	4.81 $\pm$ 0.69	0.14	92.31	0.23337	VA	0.95
	11	4.81 $\pm$ 0.69	0.14	92.31	0.23337	VA	0.95
	12	4.81 $\pm$ 0.69	0.14	92.31	0.23337	VA	0.95

**Table 3.** Results of the content validity analysis in parents (continued...)

DIMENSIONS	No item	Mean $\pm$ SD	Coefficient of variation	Acceptance (%)	Cohort points	Criterion Torgerson	V for Aiken
<b>IV.- Clinical variables</b>	1	4.83 $\pm$ 0.46	0.10	96.15	0.39262	QA	0.96
	2	4.94 $\pm$ 0.16	0.03	100.00	0.59754	QA	0.99
	3	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	4	4.85 $\pm$ 0.45	0.09	96.15	0.40175	QA	0.96
	5	4.96 $\pm$ 0.14	0.03	100.00	0.60667	QA	0.99
	6	4.92 $\pm$ 0.22	0.05	98.08	0.55088	QA	0.98
	7	4.92 $\pm$ 0.23	0.05	100.00	0.55088	QA	0.98
<b>V.- Knowledge of medications</b>	1	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	2	4.81 $\pm$ 0.58	0.12	92.31	0.30842	QA	0.95
	3	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	4	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	5	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	6	4.77 $\pm$ 0.83	0.17	92.31	0.14004	VA	0.94
	7	4.77 $\pm$ 0.49	0.10	96.15	0.40824	QA	0.94
	8	4.46 $\pm$ 0.95	0.21	86.54	0.06340	VA	0.87
	9	4.96 $\pm$ 0.14	0.03	100.00	0.60667	QA	0.99
	10	4.85 $\pm$ 0.55	0.11	92.31	0.32669	QA	0.96
	11	4.94 $\pm$ 0.21	0.04	100.00	0.56001	QA	0.99
	12	4.90 $\pm$ 0.30	0.06	100.00	0.50421	QA	0.98
	13	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	14	4.71 $\pm$ 0.87	0.18	90.38	0.11264	VA	0.93
	15	4.94 $\pm$ 0.21	0.04	98.08	0.56001	QA	0.99
	16	4.77 $\pm$ 0.83	0.17	92.31	0.14004	VA	0.94

Source: Data taken from the data collection form. Torgerson criteria: very adequate (VA), quite adequate (QA), adequate (A), not very adequate (NA) and inadequate (I).

**Table 4.** Results of the content validity analysis in professors.

DIMENSIONS	No item	Mean $\pm$ SD	Coefficient of variation	% Acceptance	Cohort Points	Criterion Torgerson	V for Aiken
<b>I.- General data</b>	1	4.96 $\pm$ 0.14	0.03	100.00	0.40824	QA	0.99
	2	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	3	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	4	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
<b>II.- Sociodemographic variables</b>	1	4.96 $\pm$ 0.14	0.03	100.00	0.60667	QA	0.99
	2	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	3	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	4	4.85 $\pm$ 0.41	0.08	98.08	0.43928	QA	0.96
	5	4.85 $\pm$ 0.41	0.08	98.08	0.43928	QA	0.96
	6	4.85 $\pm$ 0.41	0.08	98.08	0.43928	QA	0.96

**Table 4.** Results of the content validity analysis in professors (continued...)

DIMENSIONS	No item	Mean $\pm$ SD	Coefficient of variation	% Acceptance	Cohort Points	Criterion Torgerson	V for Aiken
<b>III.- Didactic resources</b>	1	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	2	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	3	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	4	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	5	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	6	4.92 $\pm$ 0.28	0.06	100.00	0.51335	QA	0.98
	7	4.92 $\pm$ 0.28	0.06	100.00	0.51335	QA	0.98
<b>IV.- Pharmacotherapeutic variables</b>	1	4.88 $\pm$ 0.42	0.09	96.15	0.42002	QA	0.97
	2	4.77 $\pm$ 0.83	0.17	92.31	0.14004	VA	0.94
	3	4.77 $\pm$ 0.83	0.17	92.31	0.14004	VA	0.94
	4	4.92 $\pm$ 0.28	0.06	100.00	0.51335	QA	0.98
	5	4.54 $\pm$ 0.97	0.22	90.38	0.12198	VA	0.88
	6	4.67 $\pm$ 0.88	0.19	90.38	0.09437	VA	0.92
	7	4.88 $\pm$ 0.42	0.09	98.08	0.42002	QA	0.97
	8	4.79 $\pm$ 0.70	0.15	92.31	0.22423	VA	0.95
	9	4.81 $\pm$ 0.69	0.14	92.31	0.23337	VA	0.95
<b>V.- Clinical variables</b>	1	4.88 $\pm$ 0.35	0.07	98.08	0.45755	QA	0.97
	2	4.87 $\pm$ 0.34	0.07	98.08	0.48594	QA	0.97
<b>VI.- Knowledge of medications</b>	1	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	2	4.81 $\pm$ 0.58	0.12	92.31	0.30842	QA	0.95
	3	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	4	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	5	5.0 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	6	4.92 $\pm$ 0.28	0.06	100.00	0.51335	QA	0.98
	7	4.77 $\pm$ 0.49	0.10	96.15	0.40824	QA	0.94
	8	4.10 $\pm$ 1.19	0.29	73.08	-0.09346	VA	0.77
	9	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	10	4.85 $\pm$ 0.55	0.11	92.31	0.32669	QA	0.96
	11	4.94 $\pm$ 0.21	0.04	100.00	0.56001	QA	0.99
	12	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	13	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00
	14	4.71 $\pm$ 0.87	0.18	90.38	0.11264	VA	0.93
	15	4.94 $\pm$ 0.21	0.04	98.08	0.56001	QA	0.99
	16	5.00 $\pm$ 0.00	0.00	100.00	0.70000	QA	1.00

Source: Data taken from the data collection form. Torgerson criteria: very adequate (VA), quite adequate (QA), adequate (A), not very adequate (NA) and inadequate (I).

**Table 5.** Results of the analysis of reliability (Cronbach's alpha) and inter-observer agreement (global Kappa coefficient)

<b>Reliability</b>			
<b>Group</b>	<b>Number of items</b>	<b>Cronbach alpha standardized item</b>	<b>Decision</b>
<b>Students</b>	33	0.623	Moderate reliability
<b>Parents</b>	48	0.609	Moderate reliability
<b>Teachers</b>	44	0.632	Moderate reliability
<b>Inter-observer agreement</b>			
<b>Group</b>	<b>Number of items</b>	<b>Overall Kappa coefficient</b>	<b>Decision</b>
<b>Students</b>	33	0.469	Moderate concordance
<b>Parents</b>	48	0.418	Moderate concordance
<b>Teachers</b>	44	0.484	Moderate concordance

Following the same validation approach of many studies, the application of expert consensus through the Delphi technique was considered because it is a structured, isolated, indirect, and multistage interaction method to determine consensus through the repetitive administration of anonymous questionnaires in two rounds (Jaam et al., 2022).

The thirteen experts who participated in this research, with a high degree of competence and experience in the subject, made it possible to validate the instruments through a systematic and integral process, integrating quantitative and qualitative aspects to reach a consensus; Thus, not only the statistical analysis of the quantitative data generated from the responses is considered, but also the statements and contributions of each of the experts, making it evident that philosophical paradigms such as positivism, interpretivism and even social constructivism support the Delphi technique (Jaam et al., 2022).

As demonstrated through the expert consensus method, the instruments designed present content validity, through statistical processing with the Torgerson model and Aiken's  $v$  value greater than 0.9; indicating that the items are clear, representative, and relevant to measure educational needs for the use of medicines, this finding is similar to that reported in other instruments that followed the same methodology to calculate content validity (Huancahuire et al., 2021; Mamani et al., 2022).

The reliability of the questionnaires designed was determined by Cronbach's alpha value, the values obtained for the instruments for students, parents and teachers were 0.623, 0.609 and 0.632, respectively, which indicates a moderate agreement; although usually, there are authors who believe that a good internal consistency would be a value of Cronbach's alpha greater than or equal to 0.7, while others claim that it should be between 0.80 and 0.90 (Tavakol and Den-

nick, 2011); however Bazarganipour et al. (2012) proposes that values between 0.61 and 0.70 can be considered acceptable; a similar case is the publication of García-Delgado et al. (2009) whose Cronbach's alpha was 0.677 and concluded that "the designed questionnaire is dynamic, valid and reliable, being able to measure the level of knowledge of patients about the medications they use" and the study of Mallah et al. (2020) where he established that the reliability of the questionnaire of knowledge, attitudes and practices on the personal use of antibiotics in Spain was revealed by Cronbach's alpha values from 0.6.

Another criterion for the validation of the instruments is the concordance that should exist between the different evaluators who apply it; some authors point out that Kappa values between 0.40 and 0.75 suggest good concordance (Fleiss et al., 2003), others publish values from 0.81 to 1.0 (DeVellis, 2005); the Kappa index value obtained for the three instruments ranged between 0.418 and 0.484 so they are classified with moderate concordance. The findings of this study agree with Ramzan et al. (2014), who points out that low Kappa values may be due to the use of open-ended questions, which allows for a broader spectrum of responses that are difficult to unify and quantify, but that a deeper insight into the respondents' opinions is achieved; and with the publication of Park (2021), where even though the validated questionnaire to measure knowledge, attitudes and practices on COVID 19 had a lower reliability value than expected, it maintained the items since they were derived from a rigorous literature review, as well as from the recommendations of the experts; Therefore, it is considered that the instruments resulting from this study will not only allow reliable quantification of the knowledge of the medications by students, parents and teachers, but also a deep understanding through the critical evaluation of the theoretical construct that was carried out.

There are several strengths associated with the three questionnaires designed and validated: their construction was carried out under a rigorous and systematic methodology, according to the characteristics of each target group (students, parents, and teachers); a broad review of the literature and the suggestions of experts were used; they will make it possible to identify in an integrated manner three target groups (students, parents, and teachers) the educational needs regarding the use of medications in primary schools. However, the study has the limitation of having a limited sample, so it will be necessary to expand it to other schools to improve the reliability values obtained.

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## CONCLUSION

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The three questionnaires designed to achieve a diagnosis of sociodemographic, pharmacotherapeutic, and clinical factors, including the knowledge of medicines of children, parents, and teachers in an elementary school, are valid and reliable, thus justifying their use to identify sufficient educational needs to develop programs that promote the rational use of medicines and that consider children as active agents capable of influencing the behavior of their family, school and home as spaces that generate changes in the behavior towards the use of medicines.

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## CONFLICT OF INTEREST

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The authors declare no conflicts of interest.

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**AUTHOR CONTRIBUTION:**

Contribution	Téllez AM	Márquez BY	Bermúdez IB	Reyes I	López M	Gómez LM
Concepts or ideas	x		x	x		x
Design	x		x	x		x
Definition of intellectual content			x	x		x
Literature search	x	x			x	
Experimental studies	x	x			x	
Data acquisition	x	x			x	
Data analysis	x		x	x		x
Statistical analysis	x	x				
Manuscript preparation	x	x	x			x
Manuscript editing	x		x			x
Manuscript review	x	x	x	x	x	x

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**Annex 1**

**Table S1.** Questionnaire for interviewing students.

Good afternoon days. My name is \_\_\_\_\_ and I am conducting a study on the use of medications in this school. The information you provide me will be very valuable to help you use them better, without harming you. It will take about 20 minutes. Do you agree? Ok, let's start then!

<b>I.- GENERAL DATA</b>										
1)	Initials of the name (XXXX001): _____						Sex F ____ M ____			
<b>II.- SOCIODEMOGRAPHIC VARIABLES</b>										
2)	How old are you?									
	Under 6 years old		06 - 08 years		09 - 11 years		Over 11 years old			
3)	What is your school grade?									
	1st	2nd	3rd	4th	5th	6th				
4)	Do you have brothers? Otherwise _____						Many? _____			
5)	Do your siblings come to this school?						Yes	No	I don't know	
<b>III.- CLINICAL VARIABLES</b>										
1)	Can you tell me if you have had any health problems in the last month:									
	Headache	Stomach pain	Tooth pain	Flu	Allergy	Reflux	Skin Disease	Infection (specify)	Other: _____	
2)	Do you remember if you have been vaccinated?						Yes	No	I don't know	
	Tetanus		Measles	Hepatitis		Influenza	Others			
	Do you remember if you have ever had an allergic reaction?						Yes	No	I don't know	
	Food, which _____			Medication which _____			Food, which _____			
	Date _____			How was it resolved? _____						
<b>IV.- LEVEL OF AUTONOMY</b>										
							Yes	No	How old were you?	
1)	Have you ever gone to the store near your home with a child older than you, for example, a brother or cousin?									
2)	Have you ever gone out to play without your family know where you were?									
3)	Have you ever gone alone to buy medicine?									
4)	Have you ever taken medicine without an adult giving it to you?									
5)	Do you know where the medicines in your house are kept?									
	If yes, where are they stored? _____									
6)	If you were home alone and had a bad headache, what would you do?									
	I am never home alone		Nothing		Sleep		Call an adult			
	Take medicine		Which one?		Other					
<b>V.- KNOWLEDGE OF MEDICINES</b>										
QUESTION							Yes	Nope	I don't know	
1)	Are medicines necessary for health?									
2)	Are injections better because they heal faster?									
3)	Are all medicines the same shape and color?									
4)	Are all medications taken by mouth?									
5)	Do all the red pills serve the same purpose?									
6)	Are the medications your parents take appropriate for you when you are sick too?									
7)	Is it always necessary to consult a doctor to take medicine?									
8)	Do medicines need to be stored in a special place in the house?									
9)	Can medicines be taken after the expiration date has passed?									
10)	Are medicinal plants as effective as medicines for the treatment of diseases?									
11)	Can medicines cure you if you have a cold?									

12)	When medicines are no longer useful, are they thrown away?
13)	Can suppositories be taken by mouth?
14)	Can plants that are used to cure a disease cause health risks?
15)	When you have diarrhea do you need to take medicine?
16)	Because of their sweet taste, can the syrups be used as a dessert?
17)	Is the medicine cabinet used to store medicines?
18)	When you take a headache pill and make you want to vomit then you shouldn't take it anymore?
19)	Can medicines for humans be used to cure animals?
<b>OVERALL RATING</b>	
< 4 points	The student does not know the medications
5-9 points	The student has insufficient knowledge about medications
9-14 points	The student has sufficient knowledge of medicines
> 14 points	The student has optimal knowledge of medications

**Table S2.** Questionnaire for interviewing parents.

Good afternoon days. My name is \_\_\_\_\_ and I am conducting a study on the use of medications in this school. The information you provide me will be very valuable to help you use them better, without harming you. It will take about 20 minutes. Do you agree? Ok, let's start then!

**I.- GENERAL DATA**

1) Initials of the name (XXXX001): \_\_\_\_\_ Sex F \_\_\_\_\_ M \_\_\_\_\_

**II.- SOCIODEMOGRAPHIC VARIABLES**

1) How old are you?

< 18 years

18-22 years

23-27 years

28-32 years

33-37 years

> 37 years

2) Marital status \_\_\_\_\_

Single

Married

Widower

Free Union

Divorced

Separate

3) Maximum school level \_\_\_\_\_

Without instruction

Preschool

Incomplete elementary school

Complete elementary school

Incomplete middle school

Completed middle school

Incomplete high school

Completed high school

Completed university

Incomplete university

Postgraduate

4) Main occupation

Officers, directors, and heads

Professionals and technicians

Workers in administrative activities

Industrial machinery operators and transport drivers

Workers in support activities

Workers in personal services and surveillance

Workers in agricultural, livestock, forestry activities, etc.

Merchants, salesclerks

Craft workers

No occupation

Other

Home

5) Number of people living in the household

2 - 4

5 - 6

> 6

6) Number of rooms in the home

< 2

2-4

> 4

7) Number of rooms used for sleeping

0

1

2

3

> 4

8) Number of bathrooms (toilet and shower)

0

1

> 2

9) Number of vehicles (cars or vans)

0

1

> 2

10) Has internet at home without considering a mobile connection

If you have

Does not have

11) Of all the people aged 14 or over who live in the household, how many worked in the last month?

0

1

2

3

> 4

12) What health system are you affiliated with? \_\_\_\_\_

**III.- PHARMACOTHERAPEUTIC VARIABLES**

May I see the container(s) of the medications you keep at home? Otherwise \_\_\_\_\_

Medicine 1

Medicine 2

Medicine 3

Medicine 4

1) Generic and trade name

2) Presentation

3) It is expired (Yes/No/Not observed)

4) Where and when did you buy it?

5) It was purchased with a prescription (Yes/No/Don't know)

6) Who did you buy it for?

7) What did you buy it for?

8) How much should you use?

9) How should you use it?

10) How long should you use it?

**IV.- CLINICAL VARIABLES**

1) Can you tell me if you or a family member suffers or suffered from any of the diseases indicated:

Family	HT	DM	Cancer	TB	AIDS	Asthma	Thyroid	CVD	Arthritis	DLP	Other	
Grandparents												
Dad												
Mother												
Sons												
HT: Hypertension / DM: Diabetes mellitus / TB: Tuberculosis / CVD: Cardiovascular disease / DLP: Dyslipidemia												
2)	Have you been vaccinated?							Yes	No	Don't remember		
	Tetanus	Measles		Hepatitis		Influenza		Others				
3)	Are you used to deworming?							Yes	No	Don't remember		
4)	Do you use any contraceptives?							Yes	No	I don't know		
	Tablets		Injection		Preservative		IUD	Other				
Have you had any complications? Yes____. No, which? _____												
5)	Do you smoke?			Yes	No			Did you smoke before? Y. N				
	Starting age to smoke _____			Number of cigarettes per day ____			How long? _____					
6)	Do you drink alcoholic drinks?							Yes	No			
	Starting age to take ____		Number of drinks ingested per day__				How many times a week ____					
Have you ever had any allergic reactions?								Yes	No	I don't know		
	Food		Medicine		Other			Date_____				
How was it resolved?												
<b>V.- KNOWLEDGE OF MEDICINES</b>												
	<b>QUESTION</b>							<b>Yes</b>	<b>No</b>	<b>I don't know</b>		
1)	Are medicines used to prevent diseases?											
2)	Are patent medicines better?											
3)	Can medicines be stored in the bathroom?											
4)	Should caution be taken when taking medications with alcoholic beverages?											
5)	Can medicines be taken after the expiration date has passed?											
6)	Do the drugs cause other effects apart from curing the disease?											
7)	Are medicinal plants as effective as medicines for the treatment of diseases?											
8)	Are antibiotics used to cure the flu?											
9)	If an unwanted effect occurs when taking a medication, should it be stopped?											
10)	Can medications taken by mouth be taken with any beverage??											
11)	Is the doctor the only professional who can prescribe medications?											
12)	Do the capsules have to be opened to take the content they have inside?											
13)	When a medication does not cure the headache, does it mean that it does not work or that the dose should be increased?											
14)	If a medicine is expired, is it thrown away with the full container?											
15)	Can plants used as medicines cause health risks?											
16)	Are suppositories or suppositories administered by mouth?											
<b>OVERALL RATING</b>												
	< 4 points					The parent does not know the medications						
	5-9 points					The parent has insufficient knowledge about medications						
	9-14 points					The parent has sufficient knowledge about medicines						
	> 14 points					The parent has optimal knowledge of medications						

**Table S3.** Questionnaire for interviewing teachers.

Good afternoon days. My name is \_\_\_\_\_ and I am conducting a study on the use of medications in this school. The information you provide me will be very valuable to help you use them better, without harming you. It will take about 20 minutes. Do you agree? Ok, let's start then!

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**I.- GENERAL DATA**

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1) Initials of the name (XXXX001): \_\_\_\_\_ Sex F \_\_\_\_\_ M \_\_\_\_\_ 2) The degree taught: \_\_\_\_\_

3) Years of being a teacher at the school: \_\_\_\_\_ 4) Additional activity in the same school: \_\_\_\_\_

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**II.- SOCIODEMOGRAPHIC VARIABLES**

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1) How old are you?

< 25 years	25-33 years	34-42 years	43-51 years	52-60 years	> 60 years
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2) What is your highest school level?

Teacher of Primary Education	BA in Primary Education	Other _____
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3) What health system are you affiliated with? \_\_\_\_\_

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4) Have you received first aid training in the last year? Describe Yes No

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5) Have you received training on the use of medications in the last year? Describe Yes No

---

6) Have you received any in the last year any course on pedagogical updating that deals with education in the classroom for children with health problems? Describe Yes No

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**III.- DIDACTIC RESOURCES**

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1) Your classroom has a desk Yes No

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2) Your classroom has a blackboard Yes No

---

3) Your classroom has enough benches for the students enrolled Yes No

---

4) Your classroom has a projector Yes No

---

5) Your classroom has internet access Yes No

---

6) Your classroom has didactic material for school activities Yes No

---

7) Do you prepare to teach support material? Yes No

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**IV.- PHARMACOTHERAPEUTIC VARIABLES**

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May I see the medication container(s) you keep in your classroom medicine cabinet? Otherwise \_\_\_\_\_

	Medicine 1	Medicine 2	Medicine 3	Medicine 4
1) Generic and trade name				
2) Presentation				
3) It is expired (Yes/No/Not observed)				
4) Who took him to school?				
5) Who did you buy it for?				
6) How much should you use?				
7) How should you use it?				
8) How long should you use it?				

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**V.- CLINICAL VARIABLES**

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1) Can you tell me if you have students in the classroom with any of the diseases or symptoms indicated:

	DM	CAN	TB	AIDS	Asthma	Allergy	Reflux	Pain	Infection	Other
Num children										
Num girls										

DM: Diabetes mellitus / CAN: Cancer /TB: Tuberculosis /AIDS: Acquired Immunodeficiency Syndrome. \* In case of pain and infection specify

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2) In the last year, have you had a student who has presented with some allergic reaction? Yes No Don't remember

Food	Medicine	Other	How was it resolved?
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<b>VI.- KNOWLEDGE OF MEDICINES</b>		<b>Yes</b>	<b>No</b>	<b>I don't know</b>
<b>QUESTION</b>				
1)	Are medicines used to prevent diseases?			
2)	Are patent medicines better?			
3)	Can medicines be stored in the bathroom?			
4)	Should caution be taken when taking medications with alcoholic beverages?			
5)	Can medicines be taken after the expiration date has passed?			
6)	Do medicines cause side effects?			
7)	Can plants used as medicines cause health risks?			
8)	Are medicines indicated for adults can be used in children?			
9)	If an unwanted effect occurs when taking a medication, should it be stopped?			
10)	Can medications taken by mouth be taken with any beverage?			
11)	Is the doctor the only professional who can prescribe medications?			
12)	Do the capsules have to be opened to take the content they have inside?			
13)	When my head hurts and the medicine doesn't take away the pain, does that mean it's useless?			
14)	If a medicine is expired, is it thrown away with the full container?			
15)	Can all the tablets be divided in half so that the child takes half the dose?			
16)	Should the contents of a medicine cabinet be checked periodically?			
<b>OVERALL RATING</b>				
	< 4 points	The teacher does not know the medications		
	5-9 points	The teacher has insufficient knowledge about medications		
	9-14 points	The teacher has sufficient knowledge of medicines		
	> 14 points	The teacher has optimal knowledge of medications		