Oral health in childhood: construction and validation of an instrument on knowledge, attitude, and practice of caregivers

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Abstract *The objective of this article is to develop and validate a KAP (knowledge, attitude, and practice) instrument for caregivers of children up to 36 months of age monitored by the Family Health Strategy. This methodological study was conducted in three stages: an integrative review, preparation of the initial version, and content validation by 29 judges. The instrument was validated for content and appearance. The Content Validity Index (CVI) and the FINN and Gwe-AC1 coefficients were calculated to assess inter-judge agreement. The overall CVI values of the 39-item instrument were: Clarity (0.91) and Relevance (0.95). The final version was obtained through 19 knowledge, 10 attitude, and 10 practice questions on caries, diet, oral hygiene, fluoride, breastfeeding, artificial feeding, milk teeth, and the need to take the baby to the dentist. The instrument produced can be used because it has the potential for use depending on the more global assessment of its psychometric properties.*

Key words *Knowledge, Attitudes and health Practices, Validation study, Caregivers, Oral health*

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Introduction

Oral health promotion has been strengthened since the establishment of the *Brasil Sorridente* Program, especially in Primary Health Care (PHC)[1]. With the emergence of the policy, oral health in early childhood has been one of the priority areas in implementing strategies, considering that few improvements in oral health indicators have been observed in recent decades[2] in the age group up to 5 years.

Early Childhood Caries (ECC) affect around 600 million children worldwide, with repercussions even in adult life[3,4]. The dental disease burden is highly concentrated in socially underserved populations, especially in Northeast Brazil, one of the poorest regions[5]. This preventable condition must be controlled with multicausal approaches, including home and professional care[5,6].

In turn, PHC plays a decisive role in articulating and promoting interventions for early childhood, and therefore, health education strategies should prioritize accessing women and their children during this unique period of life, as it is a good opportunity to integrate effective and low-cost interventions[7].

Child healthcare is consolidated as a care line through the National Comprehensive Child Healthcare Policy (PNAISC) in childcare[8] in the ESF context. Furthermore, children who receive the *Bolsa Família* (Family Aid) or government income transfer benefits are more vulnerable to oral problems and, thus, access more services[2].

Despite the relevance of oral health in the first thousand days of life, only some international and national studies adopted instruments to verify the triad of knowledge, attitudes, and practices of caregivers in oral health[9,10]. The KAP triad (Knowledge, Attitude, and Practice) consists of an important methodology used worldwide by the most diverse populations to gauge what they know, think, and do before a given health problem[11].

The authors' experience with the Northeast Family Health Training Network (RENASF) and a sensitive perspective of children's health encouraged this study to develop an instrument for decision-making regarding health promotion in PHC. Thus, this work aimed to build and validate caregivers' KAP-like instrument (knowledge, attitude, and practice), accompanied by the ESF, to promote the oral health of children up to 36 months.

Methods

This descriptive, methodological study was developed in three stages: an integrative review, elaborating the KAP instrument's initial version, and content validation by judges[12,13].

Integrative review: based the elaboration of the instrument through extensive, in-depth analysis from January to April 2019, through the guiding question: "What evidence has been produced about the knowledge, attitude, and practice of caregivers on the oral health of young children?". We verified the PubMed/MEDLINE (National Library of Medicine and National Institutes of Health), CINAHL (Cumulative Index to Nursing and Allied Health Literature), and SCOPUS/ Elsevier databases. The controlled MeSH (Medical Subject Headings) descriptors were "Health Knowledge, Attitudes, Practice", "Oral Health", "Caregivers", and "Preschool".

In the LILACS database (Latin American and Caribbean Literature in Health Sciences), the DeCS (Health Sciences Descriptors), the Portuguese-translated descriptors were "Health Knowledge, Attitudes and Practices", "Oral health", "Caregivers", and "Pre-School". Boolean operators "AND" and "OR" were used for the search based on inclusion and exclusion criteria. Inclusion criteria were published articles that answered the guiding question without language restriction and year of publication. Exclusion criteria were editorials, letters to readers, and repetition.

We adopted the oral health promotion recommendations of the main national and international Pediatric Dentistry bodies, according to the Bangkok Declaration of the International Association of Paediatric Dentistry (IAPD)[14].

Elaborating the instrument items: We had the following stages: I - Establishing the construct with support from the first stage; II - Defining the instrument's objectives; III - Building items and response scales; IV - Setting a cutoff point and preparing score intervals; V - Structuring the instrument[15].

Validation by judges: The $N = Z\alpha^2 \cdot P(1-P)/e^2$ formula for validation studies was applied to calculate the sample required for content and appearance validation, where "N" corresponds to the sample size; "$Z\alpha$" corresponds to the 95% confidence level (1.96); "P" corresponds to the proportion of judges (85%); and "e" corresponds to the acceptable proportional difference (15%). Thus, the sample totaled 29 participants.

Data were collected from May to June 2019. The instrument was sent via electronic form, and judges with expertise in the study area evaluated the initial version of the instrument by completing a Likert scale concerning the criteria "language clarity" and "theoretical relevance" of each item (Example: 1 represented "very little" and 5 "very much"). Scoring 4 and 5 indicated that the assessed item met the objective proposed in this research. Judges could add changes if they deemed it necessary.

The search for judges was conducted nationwide through the Lattes Platform of the National Council for Scientific and Technological Development (CNPq) and snowball sampling, in which an expert appointed another professional. The following inclusion criteria were used: 1) having research in oral health promotion for babies or child care within primary care or KAP instrument; 2) being a dental surgeon, doctor, or nurse and with a minimum degree of specialist or related areas; 3) having at least two years of teaching or care experience in the field.

The consensus on the knowledge, attitude, and practice concepts that underpinned the definition of categories was grounded on the following parameters[16]:

Knowledge - Reminding specific facts or the ability to apply specific facts to solve problems or even issue concepts with the understanding acquired about a specific event.

Attitude - It is essentially having opinions but also having feelings, predispositions, and beliefs that are relatively constant, directed to a goal, person, or situation.

Practice - It is the decision-making to act. It is related to the psychomotor, affective, and cognitive domains - the social dimension.

We calculated the different CVI rates after the initial data evaluations using the Statistical Package for Social Sciences (SPSS) software, version 20.0. Then, we assessed the judges' agreement using the FINN and Gwet-AC1 coefficients. The present study considered a 5% significance level and a 95% confidence level. After the quantitative analysis, we observed all the judges' suggestions based on a detailed evaluation of each comment, which improved the instrument and developed synoptic tables with each KAP triad category. The study followed all ethical precepts and was approved under opinion No. 3.172.979.

Results

The literature review elucidated eight thematic categories: caries, food characteristics, oral hygiene, fluoride use, breastfeeding, artificial nipples, deciduous teeth, and visits to the dentist. In its final version, the instrument contained 39 items (19 in the practice domain, 10 in the attitude domain, and 10 in the knowledge domain) and was entitled "Instrument to Assess the Knowledge, Attitude, and Practice of Caregivers on Child Oral Health Promotion" and focused on promoting oral health of children, emphasizing those up to 36 months.

The survey stage of the judges pointed out that (89.6%) were female and mean age of 39.3 years. Twenty-five judges were pediatric dentists, two were doctors, and two were nurses. Approximately 75.9% of the participants alleged they had teaching experience, and 37.9% had a doctorate level. The results indicate that the judges represent several Brazilian regions (Northeast, Southeast, and South), through four states (Ceará, São Paulo, Vitória, and Santa Catarina) and eight cities (Fortaleza, Barbalha, Eusébio, São Paulo, Tatuí, Itatiba, Vitória, and Florianópolis).

Calculating the Content Validity Index and applying the FINN and AC1 statistical tests

The 39 items of the initial version of the KAP instrument were analyzed individually, which resulted in calculating the CVI-I for each item regarding the language clarity and relevance criteria. The instrument's global CVI value was 0.91, with a P-value<0.001 obtained for all evaluated items.

Table 1 shows the results of applying the FINN and Gwet-AC1 statistical tests to assess the judges' agreement, and the result was significant in both tests. Therefore, we can infer that the judges statistically produced concordant evaluation results. When comparing the Gwet-AC1 values against the classification of the ICC coefficient and the FINN values against the Kappa classification, we observe that the Gwet-AC1 values are in the moderate to good range, while FINN's values are in the upper class of the classification.

The final version of the "Instrument to Assess the Knowledge, Attitude, and Practice of Caregivers on child oral health promotion": content validity

Judges made 63 suggestions besides the CVI-I values, culminating in the version presented in Charts 1, 2, and 3. The comments were regarding the structure, re-elaboration, and even the content of the items.

Nineteen questions were elaborated in the Practice domain. Each correct answer indicated that the practice on the subject was adequate. Therefore, the total scores of the practice domain range from 0 to 19 points and this item can be evaluated as adequate (14 to 19 points) or inadequate (0 to 13 points).

The Attitude domain can be evaluated using 10 questions. Each correct answer indicates that the attitude about the issue is adequate and should be coded into a "one-point" score. Therefore, the total scores of the attitude domain range from 0 to 10 points. As a result, attitude can be evaluated as adequate (6 to 10 points) or inadequate (0 to 5 points), as shown in Chart 2.

The Knowledge domain can be evaluated through 10 questions in the instrument. As the first two questions have multiple-choice answers and may have more than one correct answer, the total scores of this domain may range from 0 to 16 points. Thus, knowledge can be evaluated as adequate (12 to 16 points) or inadequate (0 to 11 points).

Table 1. Result of applying the Finn and AC1 statistics for each domain concerning the clarity and relevance criteria. Fortaleza, Ceará, Brazil, 2019.

Domain/Criteria	Finn	F-Test	P-value	Gwet - AC1	P-value
Attitude					
Clarity	0.869	7.62	<0.001	0.462	<0.001
Relevance	0.901	10.1	<0.001	0.484	<0.001
Practice					
Clarity	0.856	6.96	<0.001	0.441	<0.001
Relevance	0.908	10.9	<0.001	0.491	<0.001
Knowledge					
Clarity	0.841	6.3	<0.001	0.429	<0.001
Relevance	0.907	10.7	<0.001	0.483	<0.001

Source: Authors.

Chart 1. Final version of the questionnaire - Practice domain of oral health care providers. Fortaleza, 2019.

Inquiry	Answer
1. In the last week, how often did you offer your child sugar-added foods, such as: - Lollipops, candies, chocolates, honey, stuffed biscuits, cornstarch biscuits, and cake. - Toddynho®, boxed juice, fruit juice with sugar, soft drinks, and Danone® - Milk, porridge, or smoothie prepared with sugar, Mucilon®, Milnutri®, Neston®, Cremogema®, Farinha Láctea® or chocolate powder	a) I offered some days but not all days of the week b) I offered one to three times a day during the week c) I offered four or more times a day during the week d) I did not offer any of these foods during the week
2. Has your child's mouth ever been examined by a dentist (teeth, gums, and tongue)?	a) Yes b) No

Discussion

The study advances knowledge about oral health care in early childhood, collecting evidence in a poorly explored field involving the KAP triad. The instrument's application is an innovation in the approach, as it provides data that will support professional practice, identifying priority points for the actions of the health teams.

The application of thorough statistical tests during content validation shows the possibility of replicating the instrument, with the advantage of being user-friendly and outlining important health indicators and parenting practices.

As for the characterization of the judges, we identified several experiences from different Brazilian regions, with the important participation of dentists, doctors, and nurses, portraying the importance of the integrated perspective in childcare[2].

Health promotion involves knowing the community and building healthy spaces, including the family environment. Therefore, understanding what families know about caries, for example, brings elements to work on beliefs and myths surrounding oral health, such as medication use. The literature points out particular situations where the antibiotic tetracycline, for example, contains substances that can stain the teeth enamel in children who do not perform adequate oral hygiene after each dose of the medication[17,18].

Chart 1. Final version of the questionnaire - Practice domain of oral health care providers. Fortaleza, 2019.

Inquiry	Answer
3. Does your child already have teeth?	a) Yes b) No Instructions for the instrument's administrator: - If the caregiver answers "yes", go to question 4 of the Practice domain. - If the caregiver answers "no", go to question 13 of the Practice domain.
4. Has your child ever suffered a blow to the teeth?	a) Yes b) No *If "yes", did you take your child to the dentist? a) Yes b) No
5. How do you relieve the itching caused by your child's teething?	a) I give a pacifier with honey or sugar b) I give an iced teether c) I give some cold food d) I apply anesthetic ointment on my child's gums e) Other:_____
6. Do you clean your child's teeth?	a) Yes b) No Instructions for the instrument's administrator: - If the answer is "yes", go to question 7 of the Practice domain. - If the answer is "no", go to question 13 of the Practice domain.
7. What do you use to clean your child's teeth?	a) Diaper or gauze b) Cotton c) Finger cot d) Toothbrush e) Other:_____
8. How often have you cleaned your child's teeth in the last week (last 7 days)?	a) Never b) Sometimes, but I don't brush my child's teeth every day b) Once a day c) Twice or more times a day
9. How often did you floss your child's teeth in the last week (last 7 days)?	a) Every day b) Almost every day c) A few days d) Not at all

Chart 1. Final version of the questionnaire - Practice domain of oral health care providers. Fortaleza, 2019.

Inquiry	Answer
10. Do you brush your child's teeth with fluoride toothpaste?	a) No, I don't even use toothpaste on my child's teeth b) No, the toothpaste I use on my child's teeth does not contain fluoride c) Yes, the toothpaste I use on my child's teeth contains fluoride d) I don't know if the toothpaste I use on my child's teeth has fluoride Instructions for the instrument's administrator: - If the instrument is applied at the caregiver's home, ask to see the children's toothpaste used on the baby's teeth to assess whether it contains or does not contain fluoride. - If the answer is "c", go to question 11 of the Practice domain. - If the answer is "a", "b", or "d", go to question 13 of the Practice domain
11. Can you inform us whether the fluoride concentration in the toothpaste you use on your child's teeth?	*a) If yes, what is the concentration? PPM/FLUORIDE: _____ Instruction for the instrument applicator: b) If the instrument is applied at the caregiver's home, ask to see the toothpaste used on the child to identify the fluoride concentration if the caregiver responds that he cannot inform it: PPM/FLUORIDE:_____
12. How much fluoride paste do you usually put on your child's toothbrush?	a) The equivalent of a grain of uncooked rice b) The equivalent of a pea grain c) Half of the brush head d) Whole brush head Instruction for the instrument applicator: - If the instrument is applied at the caregiver's home, ask him to dispense the paste on the child's toothbrush
13. Do you breastfeed your child through your breast?	a) Yes b) No
14. Has your child ever had any liquid from a bottle?	a) Yes b) No *If yes, around what age did your child start using a bottle? a) During the first 6 months of life b) After the 60th month of life c) I don't remember Instructions for the instrument's administrator: - If yes, go to question 15 of the Practice domain. - If the answer is no, go to question 18 of the Practice domain
15. Does your child still use a bottle?	a) Yes b) No *If "no", around what age did your child stop using a bottle and start using a cup? a) During the first 12 months of life b) After 120 months of life c) I don't remember Instructions for the instrument's administrator: - If yes, go to question 16 of the Practice domain. - If the answer is no, go to question 18 of the Practice domain
16. How often did you offer your child the bottle to fall asleep or go back to sleep during the night in the last week?	a) Twice or more times a night during the week b) Once a night during the week c) I offered my child a bottle some nights, but not all of the week d) No night of the week

Chart 1. Final version of the questionnaire - Practice domain of oral health care providers. Fortaleza, 2019.

Inquiry	Answer
17. When preparing your child›s milk, porridge, smoothie, or juice, how often did you add products such as Neston®, Farinha Láctea®, Mucilon®, Milnutri®, Cremogema®, chocolate powder, honey, or sugar in the last week?	a) Twice or more times a day during the week b) Once a day during the week c) I added such products on some days, but not all of the week d) No day of the week
18. Has your child ever used a pacifier/nipple?	a) Yes b) No *If yes, around what age did your child start using a pacifier/nipple? a) During the first 6 months of life b) After the 60th month of life c) I don't remember *Instructions for the instrument's administrator: - If yes, go to question 19 of the Practice domain. - If the answer is no, go to question 1 of the Attitude domain.
19. Does your child still use a pacifier/nipple?	a) Yes b) No *If no, around what age did your child stop using a pacifier/nipple? a) During the first 12 months of life b) After the 120th month of life c) I don't remember *Instructions for the instrument's administrator: - If the answer is yes or no, go to question 1 of the Attitude domain.

Source: Authors.

Regarding eating habits, we addressed cariogenic foods that can demineralize the tooth's hard tissues[16]. Consuming easily fermentable free sugars should be avoided before two years of age[19] to promote infant nutrition. A study[20] that applied a children's food frequency questionnaire focusing on caregivers highlighted the importance of instruments to monitor dietary eating practices that identify children's consumption of ultra-processed foods rich in sugars, fats, and salt.

The focus of instruments on caregivers highlights the relevance of family attitudes in children's oral health. A test that used a questionnaire on the theme underscored that caregivers often have inappropriate attitudes regarding children's oral care, reflecting an intergenerational genesis[18].

Furthermore, the questionnaire addresses the recommended frequency of brushing babies' teeth, where, according to national and international recommendations, hygiene with fluoride toothpaste should be performed twice daily, after breakfast and in the last meal before going to sleep at night[21-23].

The instrument also considers how the caregiver cleans the child's teeth and what artifice is used to perform it. The toothbrush brush head's size should be proportional to the baby's mouth. Regarding fluoride paste, a concentration of at least 1000 ppm in the amount of raw rice grain should be used[20-22]. Parents usually introduce brushing with fluoride toothpaste late and delay access to the dental office, facilitating the appearance of caries.

Another point concerns dental floss, which, according to the Brazilian Association of Pediatric Dentistry, should begin even with well-separated deciduous teeth, as the brush's bristles cannot reach the region where the teeth are in contact. Dental floss is important and is performed by caregivers, which shows concern with interdental hygiene, indicating a favorable practice of oral health regarding babies[23].

Regarding the thematic category of "breastfeeding", the guidance is exclusive breastfeeding up to six months of age. It considers its contribution as a protective factor against installing occlusal changes in the primary dentition, offering a 68% reduction in the risk of malocclusions[24].

When talking about breastfeeding, one cannot fail to mention the use of "artificial nipples"

Chart 2. Final version of the questionnaire - Domain attitude of oral health care professionals. Fortaleza, 2019.

Inquiry	Answer
1. It is fine to offer the child sugar-added foods such as stuffed biscuits, cornstarch biscuits, Toddynho®, sugared milk or juice, Danone®, lollipops, candies, chocolates, and honey in the first two years of life.	a) I agree b) I don't know c) I don't agree
2. Some children's medicines, like antibiotics, cause tooth decay in the child.	a) I agree b) I don't know c) I don't agree
3. Taking care of the child's milk teeth is not so important, as they will fall out and be replaced by permanent teeth.	a) I agree b) I don't know c) I don't agree
4. It is necessary to take the child to the dentist only when there is a problem with his/her teeth.	a) I agree b) I don't know c) I don't agree
5. Parents or guardians should start flossing their child's teeth when one tooth comes in next to the other.	a) I agree b) I don't know c) I don't agree
6. The child should start using fluoride toothpaste when his/her first milk tooth erupts.	a) I agree b) I don't know c) I don't agree
7. Using a pacifier and a bottle can bend teeth and disrupt the child's breathing and speech.	a) I agree b) I don't know c) I don't agree
8. Offering a pacifier and a bottle to the child can make it difficult for him/her to suckle from the mother's breast.	a) I agree b) I don't know c) I don't agree
9. Baby teething can cause high fever or diarrhea.	a) I agree b) I don't know c) I don't agree
10. Babies are born with a desire to suck, so they need a pacifier/nipple to calm them down.	a) I agree b) I don't know c) I don't agree

Source: Authors.

presented in questions: 9(C), 10(C), 7(A), 14(P), 15(P), 18(P), and 19(P). The institutional and normative publications of the Ministry of Health advise against the use of pacifiers and bottles and recommends ending this habit by the end of the first year of life[25,26].

According to the American Academy of Pediatric Dentistry[22], the theme of babies' oral health promotion demystifies the idea that the family should only take the baby to the dentist only after the first tooth's eruption, emphasizing that the first appointment occurs by the first year. Health professionals should promote actions related to the child's future oral health, such as the chronology of tooth eruption and its repercussions, adequate cleaning, avoiding early caries, using pacifiers and bottles, and clinically examining the entire face and its soft tissues[20].

Thus, promoting children's oral health, and emphasizing the prevention of dental caries,

should be introduced into children's routines as early as possible, considering that good habits influence the quality of life and adequate knowledge for caregivers. Thus, education has been closely related as a practice that promotes children's oral health[23].

We should note that changes were made to the response pattern of the complementary questions in the "practice" domain (Questions 14, 15, 18, and 19). Despite these being recall questions, we chose to keep them in the instrument due to their importance in identifying possible associations with early weaning since they are intended to assess when the habit of bottle-feeding and pacifier sucking was introduced and removed[23,25].

Regarding the type of recall question about children's hygiene frequency, some authors warn about the limitation of this type of question. They affirm that the family is an indispensable factor for childcare and that knowledge on oral hygiene,

Chart 3. Final version of the questionnaire - Domain knowledge of oral health care professionals. Fortaleza, 2019.

Inquiry	Answer
1. Check one or more foods that you think may contribute to your child's tooth decay:	( ) Stuffed biscuits, cookies, drops, candies, and lollipops ( ) Meat, chicken, and fish ( ) Soft drinks ( ) Chocolate milk/Toddynho®/Nescau ( ) Bean ( ) Box fruit juice ( ) Honey ( ) Vegetables and legumes ( ) Egg ( ) Fried pastry and coxinha
2. Check one or more signs that you believe are caused by baby teething:	( ) Fever above 38 degrees ( ) Diarrhea ( ) Vomiting ( ) Ear problems ( ) Running nose ( ) Itchy gums ( ) Desire to bite ( ) Increased saliva ( ) Angry baby ( ) Putting their hands over their mouth
3. What is most related to the appearance of tooth decay in the child?	a) Blowing on the child's food and kissing him/her on the mouth b) Giving the child sugar-rich foods and not brushing his/her teeth before going to bed c) Let the child become malnourished d) I don't know
4. When should you take your child to the dentist for the first time?	a) When the child has a toothache b) Soon after the child is born, regardless of the appearance of the first tooth c) When all the milk teeth are in the mouth d) I don't know
5. When should you start cleaning your child's teeth?	a) When the first milk tooth erupts b) When the baby is one year old c) When all the baby teeth are in the mouth d) I don't know
6. What is the recommended amount of toothpaste with fluoride to brush the teeth of children under 3 years old?	a) The amount of a grain of uncooked rice b) The amount of a small pea grain c) The amount that covers the entire brush head d) I don't know
7. How often should we brush a child under 3 years of age teeth with fluoride toothpaste?	a) It is not necessary to brush the baby's teeth every day b) Once a day c) Twice a day d) I don't know
8. What is the recommended fluoride concentration in the paste to be used on the teeth of children under 3?	a) The concentration must be zero parts per million (ppm) of fluoride b) The concentration must be 500 parts per million (ppm) of fluoride c) The concentration must be at least 1000 parts per million (ppm) of fluoride d) I don't know/I never heard of it
9. If there is a need for the bottle to be prescribed by a professional, at what age is it advisable for the child to stop using it in order to use the cup?	a) Up to 1 year b) Up to 2 years c) Up to 3 years d) I don't know
10. If the baby uses a pacifier, at what age should the child stop using it?	a) From 1 year b) From 2 years c) From 3 years d) I don't know

Source: Authors.

cleaning frequency, diet, and changing harmful habits is passed on through guidance to parents or caregivers by the dentist to continue education promoted by these professionals[27,28].

In order to reinforce the practice, instructions were added to the applicators to verify how the caregiver puts the toothpaste on the child's brush to verify the amount dispensed. This instrument application action favors the educational process of families, as the KAP model is based on the understanding that health behavior is a sequential process, starting with acquiring scientifically correct knowledge[29,30].

Conclusion

The study produced the instrument entitled "Knowledge, Attitude, and Practice of Caregivers on Child Oral Health Promotion", totaling 39 questions involving oral health promotion themes: caries, diet, oral hygiene, fluoride, breastfeeding, artificial nipples, milk teeth, and the need to take the baby to the dentist. The global CVI values were for Clarity (91.5%) and Relevance (95.4%), which scored high and showed their internal consistency.

Besides the instrument's validity regarding the promotion of children's oral health, we concluded that this material is unprecedented and innovates in identifying oral healthcare gaps from caregivers' perspective, producing health promotion knowledge because it can be adopted depending on the more global assessment of its psychometric properties. The instrument could identify weaknesses in caregivers' knowledge, beliefs, and behaviors, thus improving the quality of life and health.

Collaborations

RCS Praxedes, FA Gubert, GB Sousa, AR Castro Júnior, MC Martins, RS Alves, EP Beserra, and APGF Vieira-Meyer worked on the conception and design; drafted and critically reviewed the article. RCS Praxedes and FA Gubert worked on the conception and project and approved the final version.

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