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Oral health habits and prevailing educational patterns during childhood and preadolescence.

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Abstract: **Introduction**: Social changes and the increasing use of information and communication technologies have altered educational patterns and the development of healthy habits in children. During childhood and preadolescence, parenting styles influence the formation of health habits, such as oral hygiene and nutrition. Excessive use of new technologies without supervision can have negative effects on children's well-being. **Objectives:** To describe the predominant educational patterns and evaluate oral health habits in children and preadolescents, as well as the influence of the use of new technologies. **Materials and Methods:** A descriptive, cross-sectional, observational pilot study was carried out on a sample of 35 children aged 7 to 11 years. A questionnaire was used to assess oral hygiene habits, diet, and the use of new technologies. **Results:** A significant relationship was found between the authoritative educational pattern and the person who filled out the survey, mostly mothers (p = 0.03). Significant associations were also observed between the use of new technologies and brushing frequency (p = 0.035), the mothers' educational level and brushing frequency (p = 0.029), the children's sex and brushing frequency (p = 0.03), soft drink consumption and brushing frequency (p = 0.045), and between the children's age and the use of new technologies (p = 0.04). **Conclusions:** The authoritative parenting style predominated in the sample and was associated with healthy hygiene and diet habits, as well as the establishment of limits on the use of technologies.

Key words: Diet, Healthy Lifestyle, Habits, Child Health, Information Technology.

Hábitos de salud oral y patrones educativos predominantes en la infancia y preadolescencia.

Resumen: **Introducción:** Los cambios sociales y el creciente uso de las tecnologías de la información y la comunicación han modificado los patrones educativos y el desarrollo de hábitos saludables en los niños. Durante la infancia y preadolescencia, los estilos de crianza influyen en la formación de hábitos de salud, como la higiene bucal y la alimentación. El uso excesivo de nuevas tecnologías sin supervisión puede tener efectos negativos en el bienestar infantil. **Objetivos:** Describir los patrones educativos predominantes y evaluar los hábitos de salud oral en niños y preadolescentes, así como la influencia del uso de nuevas tecnologías. **Material y Métodos:** Se realizó un estudio observacional transversal descriptivo y piloto en una muestra de 35 niños de 7 a 11 años. Se utilizó un cuestionario para evaluar hábitos de higiene bucal, alimentación y uso de nuevas tecnologías. **Resultados:** Se encontró una relación significativa entre el patrón educativo autoritativo y la persona que completó la encuesta, mayormente madres (p=0,03). También se observaron asociaciones significativas entre el uso de nuevas tecnologías y la frecuencia de cepillado (p=0,035), el nivel educativo de las madres y la frecuencia de cepillado (p=0,029), el sexo de los niños y la frecuencia de cepillado (p=0,03), el consumo de refrescos y la frecuencia de cepillado (p=0,045), y entre la edad de los niños y el uso de nuevas tecnologías (p=0,04). **Conclusiones:** El patrón educativo autoritativo predominó en la muestra asociándose con hábitos de higiene y dieta saludables, así como con el establecimiento de límites para el uso de tecnologías.

Palabras clave: Dieta, Estilo de Vida Saludable, Hábitos, Salud Infantil, Tecnología de la Información.

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Hábitos de saúde bucal e padrões educacionais predominantes durante a infância e a pré-adolescência.

Resumo: **Introdução:** As mudanças sociais e o crescente uso das tecnologias de informação e comunicação têm alterado os padrões educativos e o desenvolvimento de hábitos saudáveis em crianças. Durante a infância e a pré-adolescência, os estilos parentais influenciam a formação de hábitos de saúde, como higiene bucal e alimentação. O uso excessivo de novas tecnologias sem supervisão pode impactar negativamente o bem-estar infantil. **Objetivos:** Descrever os padrões educativos predominantes e avaliar os hábitos de saúde bucal em crianças e pré-adolescentes, assim como a influência do uso de novas tecnologias. **Materiais e Métodos**: Estudo observacional, transversal, descritivo e piloto com 35 crianças de 7 a 11 anos. Utilizou-se um questionário para avaliar hábitos de higiene bucal, alimentação e uso de tecnologias. **Resultados:** Identificou-se associação significativa entre o padrão educativo autoritário e a pessoa que respondeu ao questionário, majoritariamente mães (p = 0,03). Observaram-se associações entre uso de novas tecnologias e frequência de escovação (p = 0,035); nível educativo das mães e escovação (p = 0,029); sexo da criança e escovação (p = 0,03); consumo de refrigerantes e escovação (p = 0,045); idade da criança e uso de tecnologias (p = 0,04). **Conclusões:** O padrão educativo autoritário predominou na amostra, sendo associado a hábitos saudáveis de higiene e alimentação, além do estabelecimento de limites para o uso de tecnologias.

Palavras-chave: Dieta, Estilo de Vida Saudável, Hábitos, Saúde Infantil, Tecnologia da Informação.

Introduction

Over the years, society has undergone constant changes that have modified lifestyles and the dynamics of parent-child relationships. Nowadays, factors such as technology, friendships, work, and time management play a crucial role in the development of healthy habits in children. The family plays an important role in the cognitive, social, and emotional development of individuals because a variety of behaviours and attitudes depend on the different parenting styles used in child-rearing[1].

Childhood, and especially preadolescence, is a key stage in children's growth. During this phase, judgment, self-control, and willpower are developed, alongside increasing personal autonomy and intellectual activity. It is a particularly vulnerable stage in terms of lifestyle and healthy habits, as it is when behaviours and routines are acquired that will largely determine adult development. Future quality of life and health will depend on the set of positive behaviours adopted during preadolescence. Conversely, unhealthy lifestyles will result in negative health outcomes[2].

When we speak of lifestyle, we refer to a set of practices and behaviours that characterize the way an individual or community lives, determined by personal and behavioural characteristics, as well as the sociocultural context in which they live[1,3]. An unhealthy lifestyle can have long-term negative consequences for oral health, highlighting the importance of factors such as nutrition, oral hygiene, and dental visits[4-10].

We must not forget to turn our attention to Information and Communication Technologies (ICT), which are consuming a considerable amount of children's time[11].

These tools have been shown to play a fundamental role in children's education[12].

However, prolonged use can have negative consequences, and overexposure has been linked to poor eating habits, sedentary behavior, lower quality of life, and reduced sleep[10,13,14].

The family environment plays a key role in children's learning and skill acquisition processes[15,16]. The education children receive is based on the parenting styles adopted by parents to interact with their children. Among these, the following stand out [3,17,18]. Democratic or authoritative parents, who guide their children through dialogue based on understanding the purpose and justification of rules, promote open communication, support their children's autonomy, and express affection. Authoritarian parents, who adopt a parenting style focused on shaping and regulating their children's behavior through the imposition of their own beliefs, without considering the child's perspective. They typically show demanding, controlling behaviors with low emotional expression, leading to limited family communication. Permissive parents, characterized by a lenient temperament, accept their children's behavior with few demands in terms of household responsibilities and boundaries, which can potentially lead to difficulties in children's socialization.

Considering all of this, our interest lies in describing the predominant parenting patterns and evaluating oral health habits in children and preadolescents, as well as the influence of new technology use.

Materials and Methods

A descriptive, cross-sectional, observational pilot study was carried out in a population of 35 school-aged children and preadolescents between 7 and 11 years old. The participants were students at a public school in Murcia, Spain, during the school year. The study does not aim to statistically represent a general population, but rather to provide an initial approximation of oral health habits and educational patterns in this specific cohort.

Data were collected using an initial questionnaire designed by the authors (Figure 1). It consisted of 28 questions divided into four sections: general information, oral hygiene habits, diet, and the use of information and communication technologies (ICT).

It consists of 28 questions organized into four sections: general information, oral hygiene habits, nutrition, and the use of information and communication technologies (ICT).

To evaluate parenting styles, the Parenting Styles and Dimensions Questionnaire (PSDQ) was adapted (Figure 2), previously validated by Robinson in 2001[19]. In some cases, parents assisted the younger children (7–8 years old) in completing the questionnaire, which was taken into account during data analysis.

The questionnaire consists of 32 items and assesses different parenting styles through statements about parental interaction, rated on a Likert-type response scale.

General Information

1. What is your sex?
2. How old are you?
3. Are you an only child or do you have siblings? If you have, indicate which.
4. What is the marital status of the parents?
   Married / Single / Divorced or Separated
5. What is the parents' level of education?
   University or High School:
   Professional training:
   Compulsory Secondary Education (CSE):

Oral Health Habits

6. Has your child ever been to the dentist? Yes ___ No ___
7. When was the last time they went?
8. Have they ever had tooth pain? Yes ___ No ___
9. Have they received treatment for cavities? Yes ___ No ___
10. Do you supervise your child's tooth brushing? Yes ___ No ___
11. How often do you brush your teeth? Once/day ___ Twice/day ___ Occasionally ___
12. Do you use dental floss or mouthwash? Yes ___ No ___
13. Have you ever had dental trauma? Yes ___ No ___
14. Are new technologies made available to you? All day ___ At night or midday ___
15. How much time do you spend watching cartoons on TV or tablet?
    30 minutes or less ___ 1 hour ___ More than 2 hours ___

Nutrition

16. How many meals do you have per day? Breakfast ___ Lunch ___ Snack ___ Dinner ___
17. Do you frequently eat meals outside the home? Yes ___ No ___ Sometimes ___
18. If yes, where do you usually eat?
    Restaurants ___ Fast food (McDonald's, Burger King...) ___ Snack bars ___ Others ___
19. What do you usually have for breakfast?
20. Who do you eat breakfast with?
    With someone from the family ___ With the whole family ___ Alone ___
21. How do you eat breakfast? Watching TV ___ Using a phone ___ Studying/Reading ___
22. Where do you have breakfast? At home ___ On the way ___ Elsewhere ___
23. Do you usually eat prepared foods? Yes ___ No ___
24. What do you eat (mark those that apply)?
    Vegetables and salads ___ Fish ___ Fruit ___ Cereals/Bread ___ Carbohydrates ___
25. Which of these foods do you usually eat at recess?
    Sandwich ___ Pastries ___ Packaged juices ___
26. When do you usually drink soda? Every day ___ On special occasions ___ Never ___
27. How much fruit do you eat per day? None ___ One ___ More than two ___
28. Do you follow a specific diet? Mediterranean ___ Vegetarian ___ Gluten-free ___

Figure 1. *Habit questionnaire designed by the authors for data collection.*

1	I respond to my child's feelings or needs. 1 2 3 4 5
2	I use physical punishment as a method to discipline my child 1 2 3 4 5
3	I take into account my child's wishes before asking them to do something. 1 2 3 4 5
4	When my child asks me why they have to do something, I respond with "because I said so" or "because I'm your parent and I want it that way." 1 2 3 4 5
5	I explain to my child how I feel about their good or bad behavior. 1 2 3 4 5
6	I slap my child when they are disobedient. 1 2 3 4 5
7	I encourage my child to talk about their problems. 1 2 3 4 5
8	I find it difficult to discipline my child. 1 2 3 4 5
9	I encourage my child to freely express themselves, even when they disagree with me. 1 2 3 4 5
10	I punish my child by removing privileges with little or no explanation. 1 2 3 4 5
11	I explain the reasons behind rules. 1 2 3 4 5
12	I give comfort and understanding when my child is sad or disappointed. 1 2 3 4 5
13	I yell at my child when they misbehave. 1 2 3 4 5
14	I praise my child when they behave well. 1 2 3 4 5
15	I end up giving in when my child throws a tantrum. 1 2 3 4 5
16	I have outbursts of anger toward my child. 1 2 3 4 5

17	I threaten to punish my child more often than I actually do. 1 2 3 4 5
18	I consider my child's preferences when making plans for the family. 1 2 3 4 5
19	I grab my child firmly when they are disobedient. 1 2 3 4 5
20	I set punishments for my child but then don't follow through. 1 2 3 4 5
21	I show respect for my child's opinions by encouraging them to express themselves. 1 2 3 4 5
22	I let my child give input on family rules. 1 2 3 4 5
23	I scold and criticize my child to improve their behavior. 1 2 3 4 5
24	I spoil my child. 1 2 3 4 5
25	I give my child explanations about why rules should be followed. 1 2 3 4 5
26	I use threats as punishment with little or no justification. 1 2 3 4 5
27	I show affection and closeness with my child. 1 2 3 4 5
28	I punish my child by leaving them alone somewhere with little or no explanation. 1 2 3 4 5
29	I help my child understand the impact of their behavior by talking with them about the consequences of their actions 1 2 3 4 5
30	I scold or criticize my child when their behavior doesn't meet my expectations. 1 2 3 4 5
31	I explain the consequences of my child's behavior. 1 2 3 4 5
32	I slap my child when they misbehave. 1 2 3 4 5

Figure 2. *Adaptation of the Parenting Styles and Dimensions Questionnaire (PSDQ), validated by Robinson in 2001.*

Regarding parenting styles, after administering the PSDQ, scores were calculated and the classical categorization into authoritative, authoritarian, and permissive styles was established. However, we also decided to include two additional categories: "authoritative with a permissive tendency" and "authoritative with an authoritarian tendency." These new “trend” categories have also been supported by other authors[20].

The analysis of results was initially conducted using descriptive statistics, including frequency distributions and percentage analysis of the responses. To assess the relationships between categorical variables, the Chi-square test was used, with a significance level set at $p<0.05$. Data analysis was performed using Jamovi software, version 2.3.12.

The study was reviewed and approved by the Research Ethics Committee of the University of Murcia (Spain) (Act No. 3/2023/CEI). Additionally, consent was obtained from the educational institution and from the parents of each student surveyed.

Results

The final sample consisted of 35 children aged between 7 and 11 years, with an average age of 8.5 years.

Regarding hygiene habits, 51.4% of participants reported having received some treatment for cavities, while 48.6% indicated they had not. As for brushing frequency, 74.3% of children brushed their teeth more than once a day, 17.1% brushed once a day, and 8.6% brushed occasionally.

In the analysis of dietary habits, the most common breakfast included milk or yogurt (75.8%), followed by sandwiches (15.2%). During school recess, 58.8% of children consumed snacks or sandwiches, while 26.5% preferred juices. With respect to soft drink consumption, 73.5% of children consumed them occasionally, while 23.5% reported not consuming soft drinks at all.

Regarding the use of ICT, 67.7% of children used them during midday or at night, while 19.4% reported using them throughout the entire day. The average ICT usage time ranged between one and two hours daily for 42.9% of participants.

Additional analyses were conducted to assess the relationships between variables. When comparing by sex, it was found that girls had a higher frequency of tooth brushing than boys ($p = 0.03$). A significant relationship was also observed between ICT use and brushing frequency ($p = 0.035$), where children who used ICT moderately exhibited a higher brushing frequency (Figure 3).

This figure shows the percentage of children and preadolescents who brush their teeth more than once a day in relation to moderate (blue) or prolonged (orange) use of information and communication technologies (ICT) ($p = 0.035$).

The mother's level of education also showed a significant relationship with brushing frequency ($p = 0.029$), with higher brushing frequency among children whose mothers had a higher level of education.

Additionally, a significant association was found between soft drink consumption and brushing frequency ($p = 0.045$), with children who consumed soft drinks occasionally demonstrating a higher frequency of brushing.

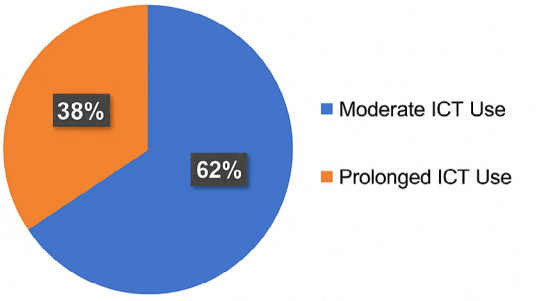

Figure 3. *Relationship between brushing frequency and ICT use.*

In the age group analysis (7–8 years vs. 10–11 years), it was observed that older children (10–11 years) used ICT more frequently than younger children (7–8 years) (p = 0.04). However, it is acknowledged that the small size of the age-based subgroups reduces the statistical power of this analysis, representing a limitation that should be addressed in future research.

Results showed that 61.8% of participants exhibited an authoritative parenting style, while only 29.4% displayed a permissive style. Most of the surveys were completed by mothers, representing 62.9% of the total.

Table 1. *Predominant parenting styles among children and preadolescents.*

Parenting style	Percentage (%)
Authoritative	61.8
Permissive	29.4
Authoritative with permissive tendency	5
Authoritative with authoritarian tendency	3.8

No differences were observed in relation to parenting style. There was only one predominant style, which was authoritative (Table 1).

Discussion

The results of this study show that the predominant parenting style among preadolescents was authoritative, which aligns with previous research linking this parenting style to better general and oral health outcomes in children. The authoritative style promotes greater supervision and communication in daily habits, which could explain the higher brushing frequency observed in our sample (74.3% of children brushed their teeth more than once a day), consistent with previous studies emphasizing the importance of parental involvement in oral health[16].

Regarding dietary habits, our findings showed that the consumption of healthy foods, such as milk or yogurt at breakfast, was predominant (75.8%), although some children still consumed soft drinks occasionally (73.5%). This behaviour is consistent with what was reported by Huerta et al.[21], who also found that snacks were the most commonly consumed foods during recess. While this could be associated with the onset of cavities in children, our study did not find a significant association between soft drink consumption and the occurrence of cavities.

In addition, a significant relationship was observed between ICT use and brushing frequency (p = 0.035). This finding is consistent with studies suggesting that excessive use of technologies may interfere

with daily self-care routines[22]. This regard, our results support the hypothesis that children who use ICT in a controlled manner tend to maintain healthier habits, such as regular tooth brushing.

The age group analysis also showed that older children (10–11 years) used ICT more frequently than younger ones (7–8 years) (p = 0.04), which is consistent with data from the National Institute of Statistics (INE)[23], reflecting an increase in the use of electronic devices as children grow older.

One of the main limitations of this study is the small sample size and its subdivision by age groups, which reduces the statistical power of the results. Additionally, although the questionnaire was designed to be answered by the children themselves, in some cases, parents assisted the younger children, which may have introduced bias into the responses. It is possible that parents did not fully reflect their children's actual habits when responding on their behalf.

Finally, we believe that future research should expand the sample size and conduct comparative studies across different sociocultural contexts, which could provide a more comprehensive understanding of the influence of parenting styles and ICT use on oral health habits.

Conclusion

This pilot study allowed for the identification of predominant parenting styles and their relationship with oral health habits in preadolescents. The authoritative parenting style was the most common in the sample and was associated with a higher frequency of tooth brushing, suggesting that active parental involvement in monitoring hygiene routines plays a key role in the adoption of healthy practices.

Additionally, moderate use of ICT was associated with better brushing habits, highlighting the importance of setting limits on screen time to promote healthy routines.

Although the study did not find significant differences between soft drink consumption and its impact on oral health, occasional consumption patterns were observed, which could contribute to the long-term prevention of cavities. However, the limited statistical power due to the small sample size and the age group subdivision should be taken into account.

In summary, the findings from this population suggest that parenting styles and controlled use of technology play a crucial role in promoting healthy habits during preadolescence. These results may serve as a foundation for future research and intervention programs aimed at improving the oral and general health of children and adolescents.

Conflict of Interest

The authors declare that they have no conflicts of interest regarding the publication of this article.

References

1. Alcaina LA, Saura LV, Pérez PA, Guzmán PS, Cortés LO. Salud oral: influencia de los estilos de vida en adolescentes. Pediatr Aten Primaria. 2020;22(87):251-61.
2. Campo-Ternera L, Herazo-Beltrán Y, García-Puello F, Suarez-Villa M, Méndez O, Hoz FVD la. Estilos de vida saludables de niños, niñas y adolescentes. Salud Uninorte. 2017;33(3):419-28.
3. Martins C, Ayala-Nunes L, Nunes C, Pechorro P, Costa E, Matos F. Análisis confirmatorio de la versión reducida del Cuestionario de Dimensiones y Estilos Parentales (PSDQ) en una muestra portuguesa. Eur J Educ Psychol. 2018;11(2):77-91.
4. Chunga VBN, Peña CMA. Nivel de conocimiento sobre dieta cariogénica de los padres de familia del nivel primario de la institución educativa Víctor Francisco Rosales Ortega, Piura 2021. Repos Inst - USS. 2022.
5. Basulto J, Ojuelos FJ, Baladia E, Manera M. Azúcar en alimentos infantiles: la normativa española y europea, ¿a quién protege? Pediatr Aten Primaria. 2016;18(69):155-64.
6. Ferreira-Díaz MJ, Laguía A, Topa G. Pacientes coronarios hablando de riesgos nutricionales: etiquetado NutriScore y máquinas de «vending» en los hospitales. Acción Psicol. 2020;17(2):75-87.
7. Betetta RJN, Guido APMP. Relación de la condición bucal y el desarrollo psicomotor en niños de 6 y 7 años. Rev Cubana Estomatol. 2020;59(3):293.
8. Soria-Hernández DMA, Molina-F DN, Rodríguez-P DR. Hábitos de higiene bucal y su influencia sobre la frecuencia de caries dental. Acta Pediatr Mex. 2008;29(1):21-4.
9. Pérez-Silva A, Cury JA, Martínez-Beneyto Y, Serna-Muñoz C, Cabello I. Concentración de fluoruro total y soluble en pastas dentales de uso infantil en España. Rev Esp Salud Pública. 2021;95:1-10.
10. American Academy of Pediatric Dentistry. Periodicity of examination, preventive dental services, anticipatory guidance/counseling, and oral treatment for infants, children, and adolescents. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2023.288-300.
11. Antoniassi SG, Machado CO, Santos DSD, Santos LD, Höfelmann DA. Screen time, quality of the adolescent diet, and profile of the school environment. Cienc Saude Coletiva. 2024;29(1):e00022023.
12. Tirado-Morueta R, Aguaded-Gómez JI, Hernando-Gómez Á. The socio-demographic divide in Internet usage moderated by digital literacy support. Technol Soc. 2018;55:47-55.
13. Strasburger VC, Hogan MJ, Mulligan DA, Aminuddin N, Christakis DA, Corinn C, *et al*. Children, adolescents, and the media. Pediatrics. 2013;132(5):958-61.
14. Rodríguez MP, Roselló AL. Herramientas de prevención, herramientas diagnósticas y nuevas tecnologías en los trastornos del sueño. Pediatr Integral. 2023;27(8):435-49.
15. Cortez NAE, Tunal GS. Técnicas de enseñanza basadas en el modelo de desarrollo cognitivo. Educ Humanismo. 2018;20(35):152.
16. Burgos-Jama MM, García-Cedeño ML. Los estilos de crianzas en el desarrollo socioafectivo de niños de 6 a 11 años. Dominio Las Cienc. 2020;6(4):732-50.
17. Torre-Cruz MJD, García-Linares MC, Casanova-Arias PF. Relaciones entre estilos educativos parentales y agresividad en adolescentes. Electron J Res Educ Psychol. 2014;12(1):147-70.
18. Henao AMG, Montoya JWP, Gallego MMÁ, Mesa EDV, Idarraga LVC. La dinámica familiar y estilos de crianza: pilares fundamentales en la dimensión socioafectiva. Hallazgos. 2019;16(32):1-20.
19. Robinson CC, Mandleco B, Olsen SF, Hart CH. The parenting styles and dimensions questionnaire (PSDQ). In: Perlmutter BF, Touliatos J, Holden GW, editors. Handbook of family measurement techniques. Vol. 3. Thousand Oaks, CA: Sage Publications; 2001.319-21.
20. Quek SJ, Sim YF, Lai B, Lim W, Hong CH. The effect of parenting styles on enforcement of oral health behaviours in children. Eur Arch Paediatr Dent. 2021;22(1):83-92.
21. Huerta MAA, Sánchez VA, Volante JS, Nicolás NA, Francisco AV, Ramírez SL. Estudio descriptivo sobre hábitos alimentarios en el desayuno y almuerzo de los preadolescentes de Viladecans (Barcelona). NURE Investig. 2006;3(4):5.
22. Aguilar-Ayala FJ, Duarte-Escobedo CG, Rejón-Peraza ME, Serrano-Piña R, Pinzón-Te AL. Prevalencia de caries de la infancia temprana y factores de riesgo asociados. Acta Pediatr Mex. 2014;35(4):259-66.
23. Instituto Nacional de Estadística (INE). Encuesta sobre equipamiento y uso de tecnologías de información y comunicación en los hogares. Año 2022 [Internet]. INE; 2022. Disponible en: https://www.ine.es/prensa/tich_2022.pdf

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