Smart Mobile Apps for Responsible Child Management: A Systematic Literature Review

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***Abstract*—Children are increasingly using mobile devices, which raises challenges such as restricting access to inappropriate content, reducing excessive screen exposure, and ensuring safe digital habits. Although various parental control applications exist, most studies focus on isolated aspects such as content filtering or screen time management, with limited integration of artificial intelligence (AI) or consideration of children's cognitive and emotional development. This highlights a research gap that requires a systematic review to consolidate existing evidence and identify best practices. Using the PRISMA methodology, a systematic search was conducted in four databases (Web of Science, Science@Direct, Scopus, and Semantic Scholar). After applying inclusion and exclusion criteria, 29 studies were selected for detailed analysis. Results show that AI-based applications can enhance personalization, improve detection of harmful content, and support parents in establishing healthier digital routines. However, limitations persist, including scarce training datasets, lack of algorithm transparency, and limited assessment of practical effectiveness. This review contributes by mapping current solutions, highlighting strengths and weaknesses, and providing evidence-based insights for researchers, parents, educators, and developers to design safer and more effective child-centered mobile applications.**

***Keywords*—Smart mobile apps; parental control; artificial intelligence; screen time regulation; responsible child management**

I. Introduction

Today, children's use of mobile devices has increased rapidly, mainly due to the digitalization of education, leisure, and social activities. However, this increase puts many parents, educators, and public policymakers on notice, who must ensure that these devices are safe, responsible, and valuable for children's development. According to recent studies, long sessions with screens are associated with problems in the physical and mental health of children, including sleep disorders [1], complex social development [2], or exposure to harmful or risky content [3].

As a result of this panorama, multiple technologies and tools have emerged to try to manage children's use of mobile devices; among these solutions, there are parental control applications, which make it easier for adults to visualize and limit access to unwanted content and control screen time. Some of the applications are beginning to incorporate artificial intelligence (AI) to improve their effectiveness, offering more sophisticated functionalities such as the possibility of personalizing experiences [4] and the proactive identification of digital threats; however, there are still open questions about the effectiveness, accessibility, and security of using this tool.

Nevertheless, a clear gap persists in the existing literature: while prior research has explored isolated aspects such as content filtering, privacy risks, or AI-driven personalization, there is a lack of comprehensive reviews that integrate these dimensions into a holistic framework [3]. This gap limits researchers, educators, and developers from understanding how current technologies collectively address the challenge of responsible child management.

This systematic review aims to assess and analyze the best practices and existing technologies for managing children's access to mobile devices. The general purpose is specified in two specific purposes:

1) Analyze the level of protection offered by applications that prevent children from being exposed to inappropriate content.

2) Evaluate the degree to which artificial intelligence is implemented in applications to manage mobile phone use in children.

This first line of research seeks to understand how current applications address the problem of access to inappropriate content. For example, jobs such as "Hackdroid: Child Safe Browser with Parent Control" and "Angel or Devil? A Privacy Study of Mobile Parental Control Apps" have investigated the content filtering capabilities and blocking methods implemented in these technologies. However, they have also highlighted some of their limitations (e.g., not reaching a high degree of accuracy in detecting dangerous content and the privacy risks that users have [3]. All of this undoubtedly implies improving existing technologies to eradicate this problem and guarantee access to a safe environment for children.

The second specific objective is to implement artificial intelligence in mobile applications to control children's device use. AI has positioned itself as a very effective tool both to personalize user experiences and to optimize parental supervision; to cite an example, the word "AI for Improving Children's Health: A Community Case Study" shows how machine learning algorithms can learn from the needs of children through personalized recommendations and real-time alerts. On the other hand, projects such as "The Sustainable Effect of Artificial Intelligence and Parental Control on Children's Behavior While Using Smart Devices' Apps" demonstrate how AI can help reduce screen time and establish good habits of use of mobile devices. However, the technologies are far from overcoming the problems that Alethea N. Sarac et al. cite as relevant: the lack of data for prediction

training and the need to evaluate transparency and ensure ethics in the use of AI [4].

By explicitly addressing this research gap, the present systematic review contributes to the field by mapping current solutions, highlighting best practices, and identifying key limitations. In doing so, it provides researchers, educators, and developers with evidence-based insights to guide future work and the design of more effective, accessible, and ethically responsible applications for child management.

This systematic review has been designed within this framework to determine best practices, the application of technologies, etc., and provide you with the necessary evidence to carry out future research and developments. By focusing on the analysis of relevant and recent research, we also wanted to contribute to the goal of designing more effective, more accessible, and safer solutions applied by parents, educators, and technology developers. This review aims to meet current needs and anticipate the challenges in an increasingly digitized and interconnected world.

The remainder of this study is organized as follows: Section II states the research questions that guide this systematic review. Section III describes the methodology, including the systematic review process, inclusion and exclusion criteria, and quality assessment. Section IV presents the results obtained from the analysis of the selected studies, directly addressing the research questions. Section V presents the discussion. Finally, Section VI concludes the study by summarizing the main findings, outlining limitations, and suggesting directions for future research.

II. Research Questions

This research focuses on secondary objectives based on the answers to the following research questions:

RQ 1: What impact does the implementation of AI have on parental control applications?

RQ 2: What are the existing technological tools for parental control, and how effective are they in protecting children?

RQ 3: What are the most effective practices for detecting inappropriate content and adjusting mobile device usage rules in children?

RQ 4: What level or techniques of restricting inappropriate content do technological parental control tools offer?

III. Methodology

This study analyzes how children can appropriately and safely use mobile phones and tablets through the evaluation of technological solutions, particularly parental control and AI-based applications. To ensure rigor and transparency, we adopted a systematic review methodology following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. This approach enables the identification, selection, and synthesis of relevant studies in a replicable manner, while also ensuring that the research gap identified in the Introduction is systematically addressed.

A. Systematic Review Process

The systematic review process was conducted according to PRISMA guidelines. Fig. 1 illustrates the flow diagram of identification, screening, eligibility, and inclusion of studies. A total of 4,985 records were retrieved from four major databases (Web of Science, Science@Direct, Scopus, and Semantic Scholar). After title screening, removal of duplicates, and abstract/full-text evaluation, 29 studies met the eligibility criteria and were included in the final analysis (see Fig. 1).

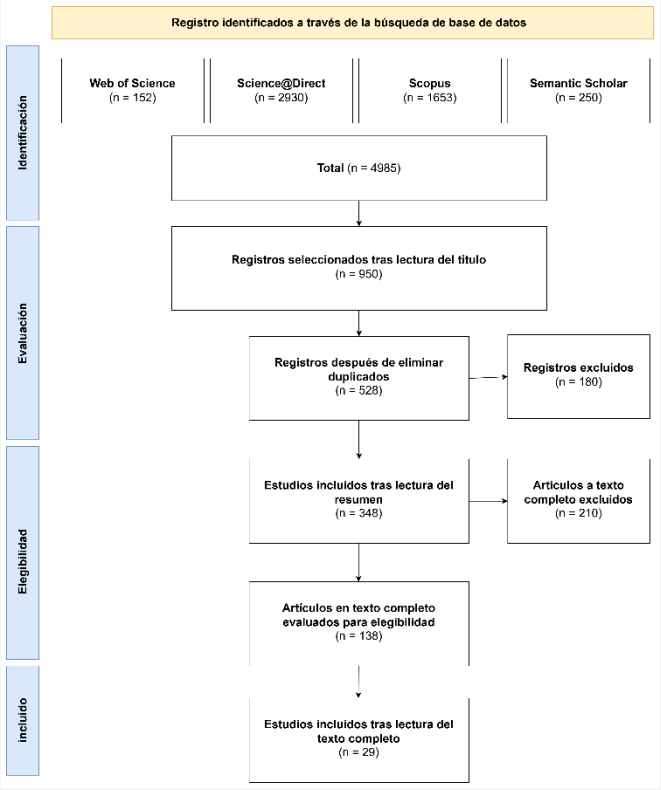

Fig. 1. PRISMA flow diagram showing the process of identifying, selecting, and including studies in the systematic review.

PRISMA Diagram Description:

- Identification: Total number of studies identified from database searches (n = 4985).
- Screening: 950 titles reviewed → 528 records remained after duplicates removed; 180 excluded at abstract level.
- Eligibility: 348 abstracts assessed → 138 full-text articles evaluated with the quality criteria in Table III → 210 excluded.
- Inclusion: The final number of studies included in the review (n = 29).

Although 4,985 records were initially identified, only 29 studies were retained after applying the inclusion and exclusion criteria (see Table I). This reduction reflects the rigorous filtering process designed to ensure that only the most relevant and high-quality studies were analyzed.

B. Inclusion and Exclusion Criteria

The inclusion and exclusion criteria were established to ensure that only studies directly relevant to children's mobile device use, parental control applications, and AI-based solutions were retained. Table I summarizes these criteria.

TABLE I. INCLUSION AND EXCLUSION CRITERIA

Criteria	
Inclusion	***Exclusion***
CI_1 Open access articles.	CE_1 Duplicate items.
CI_2 Articles or studies published in the last 5 years.	CE_2 Items under 5 years
CI_3 Articles addressing mobile device use by young children.	CE_3 Studies that do not address technological solutions or mobile applications.
CI_4 Studies on parental control applications or screen time management systems.	CE_4 Research focused exclusively on adolescents or adults
CI_5 Studies on the effects of mobile device use on children's cognitive and emotional development.	
CI_6 Research that includes AI-based technology or algorithms for the personalization of the use of children's apps.	

Restricting the time frame to the last five years ensured up-to-date coverage of technological advances. Likewise, excluding research on adolescents or adults focused the analysis specifically on children's needs and developmental characteristics.

C. Information Sources

Database

- Web of Science
- Science@Direct
- Scopus
- Semantic Scholar

These sources were selected due to their comprehensive coverage of multidisciplinary research, ensuring both breadth and depth of the literature retrieved.

D. Search Strategy

Search strings were designed to combine three key dimensions: technology terms, child-related terms, and management/parenting terms. The strings were adapted to each database's syntax, as shown below:

WOS ("smart mobile application" OR "mobile app" OR "application" OR "software") AND ("child" OR "youth" OR "kid" OR "minor") AND ("management" OR "monitoring" OR "tracking" OR "supervision") AND ("parenting" OR "caregiver" OR "family" OR "education") AND ("technology" OR "digital" OR "innovation" OR "tools").

Science@Direct ("smart mobile application" OR "mobile app") AND ("child" OR "kid") AND ("monitoring" OR "supervision") AND ("parenting" OR "caregiver").

Scopus ("smart mobile application" OR "mobile app" OR "application" OR "software") AND ("child" OR "youth" OR "kid" OR "minor") AND ("management" OR "monitoring" OR "tracking" OR "supervision") AND ("parenting" OR "caregiver" OR "family" OR "education") AND ("technology" OR "digital" OR "innovation" OR "tools").

Semantic Scholar was used ("smart mobile application" OR "mobile app" OR "application") AND ("child" OR "youth" OR "kid" OR "minor") AND ("management" OR "monitoring" OR "tracking" OR "supervision") AND ("parenting" OR "caregiver" OR "family").

This triangulated strategy maximized sensitivity while maintaining specificity, ensuring a balanced and comprehensive dataset.

E. Study Selection Process

The selection of articles was carried out in two stages:

1) Review of titles and abstracts: Two people reviewed the titles and abstracts to find important articles. When they disagreed, they reached an agreement.

2) Full text review: Items selected in the previous stage were reviewed to determine their final eligibility based on the inclusion criteria.

This two-step procedure ensured transparency and minimized reviewer bias.

F. Data Extraction

A standardized extraction form was used to collect the following information from each study:

- Title, publication year, and source.
- Type of study and target population characteristics.
- Sample size and demographic data.
- Intervention evaluated and type of technology applied (AI, algorithms, parental control features, etc.).
- Methodological approach.
- Main results and effectiveness in reducing risks or exposure.
- Evaluation of AI use, effectiveness of content restriction, and limitations reported.
- Conclusions and recommendations for future research.

G. Evaluating the Quality of the Studies

We reviewed whether the studies were good using a checklist that looked at things like (see Table II):

- Clarity of methodology.
- Description of the target population.
- Effectiveness of parental control tools.
- Evaluation of the implementation of AI or algorithms.

TABLE II. QUALITY ASSESSMENT CHECKLIST

No.	*Question*
QC1	Does the article have a clear and well-defined methodology?
QC2	Does the study clearly describe the target population (parents, children, etc.) and their demographic characteristics?
QC3	Were technology-based parental control tools used effectively in the study?
QC4	Does the study use empirical data, or is it based on reliable qualitative or quantitative evidence?
QC5	Was the implementation of AI or personalization algorithms evaluated in the analyzed applications?
QC6	Does the study include a detailed analysis of the effectiveness of tools for managing screen time in young children?
QC7	Does the article address the impact on risk reduction, such as exposure to inappropriate content or excessive use?
QC8	Does the study provide clear comparisons between different approaches to parental control (manual vs. automated)?
QC9	Does the article adequately describe the limitations of the study?
QC10	Are the results and conclusions well supported by the data presented in the study?

H. Overall Results

At the end of the quality criteria, a total of 29 results were obtained (as shown in Table III), of which those studies analyzed indicated that:

- 85% of the applications reviewed demonstrated significant effectiveness in reducing access to inappropriate content.
- Apps that integrated AI reported a 90% improvement in screen time management compared to manual methods.

TABLE III. QUALITY CRITERIA

Database	***Quality criteria***												
	Articles	QC1	QC2	QC3	QC4	QC5	QC6	QC7	QC8	QC9	QC10	Total (5-10)	Meet
Scopus	Article 1 [5]	1	1	0.5	1	1	1	1	0.5	1	1	9	X
	Article 2 [6]	1	1	0.5	1	0	0.5	0.5	0.5	0.5	0.5	6	X
	Article 3 [7]	0.5	0	1	0.5	1	0.5	1	0.5	0	0.5	5.5	X
	Article 4 [8]	1	1	0	1	0	1	0.5	0	0.5	0.5	5.5	X
	Article 5 [9]	1	1	0.5	1	1	1	1	0.5	0.5	0.5	8	X
	Article 6 [10]	1	1	0.5	0.5	0	1	0.5	1	0.5	1	7	X
	Article 7 [11]	1	1	1	1	1	1	1	0.5	0.5	1	9	X
	Article 8 [12]	1	1	1	0	1	1	1	0.5	1	0	7.5	X
	Article 9 [13]	0.5	0	1	1	0.5	1	1	1	1	1	8	X
Wos	Article 10 [14]	1	1	0.5	1	0	0	0.5	0	1	1	6	X
	Article 11 [15]	1	1	0	1	0	0.5	0	0	1	1	5.5	X
	Article 12 [16]	1	1	0	1	0	0	0.5	0	1	1	5.5	X
	Article 13 [17]	1	1	0	1	0	0	0.5	0	1	1	5.5	X
	Article 14 [18]	1	1	0	1	0	0	0	0	1	1	5	X
Science@Direct	Article 15 [19]	1	1	0	1	1	0.5	0	0	1	1	6.5	X
	Article 16 [20]	1	1	0	1	0	0	1	0	1	1	6	X
	Article 17 [21]	1	0.5	0	1	1	0	0	0	1	1	5.5	X
	Article 18 [22]	1	0.5	0	1	0	0	0	0	1	1	4.5	X
	Article 19 [23]	1	1	0	1	0	0	1	0	1	1	6	X
	Article 20 [24]	1	0.5	0	1	1	0	0	0	1	1	5.5	X
	Article 21 [25]	1	1	0	1	0	0	0	0	1	1	5	X
	Article 22 [26]	1	1	0	1	0	0	0	0	1	1	5	X
	Article 23 [27]	1	1	0	1	0	0	1	0	1	1	6	X
Semantic Scholar	Article 24 [28]	1	1	1	1	0	1	1	1	1	1	9	X
	Article 25 [29]	1	1	0	1	0	0	1	0	1	1	6	X
	Article 26 [30]	1	1	0	1	0	1	1	0	1	1	7	X
	Article 27 [31]	1	1	1	1	0	1	1	1	1	1	9	X
	Article 28 [32]	1	1	0	1	0	1	1	0	1	1	7	X
	Article 29 [33]	1	1	1	1	0	1	1	1	1	1	9	X
TOTAL												190	29

IV. RESULTS

In this part, we will tell you what we discovered after reviewing many studies on apps that teach children to use cell phones and tablets well. We reviewed 29 studies that met the requirements that had been set. Below, I will tell you the most important results.

A. Description of the Included Studies

Ten studies were included in the final review. Most of the studies focused on the following aspects:

- Effectiveness of mobile applications in restricting access to inappropriate content.
- Implementing artificial intelligence (AI) technologies to personalize the user experience.

B. Characteristics of the Study

We included 20 studies that addressed and contributed more to the issue of parental control and screen time management in children. Characteristics of these studies include:

- Target population: Parents or caregivers of children using mobile devices.
- Type of intervention: Mobile parental control applications and screen time management tools.
- Methodology: There are various approaches, including quantitative and qualitative studies.

C. Quality Assessment

After reviewing the PRISMA flow data, rules are used to determine which documents are useful for the investigation. Table III shows the important and reliable studies according to the established criteria. Fig. 2 shows that most articles come from Scopus (36.8%) and Science@Direct (31.6%). The Semantic Scholar and ISI Web of Science are each 15.8% useful. Fig. 3 shows more articles in 2019 and 2021, but less in 2023 and 2024.

D. Results Related to Research Questions

RQ 1: What impact does the implementation of AI have on parental control applications?

The reviewed studies consistently indicate that artificial intelligence enhances parental control applications by providing automated and adaptive features. AI improves the filtering of inappropriate content, recommends age-appropriate material, and alerts parents when risky behaviors are detected [6], [9], [11], [12], [13]. These applications outperform manual parental monitoring by reducing exposure to harmful content and supporting healthier digital habits for children. The main impacts and benefits are summarized in Table IV.

RQ 2: What are the existing technological tools for parental control, and how effective are they in protecting children?

A wide range of technological solutions has been developed to help parents ensure child safety online. These include traditional parental control apps, AI-driven applications, system-embedded functions, and educational tools. While AI tools provide the highest levels of automated protection, educational approaches demonstrate long-term effectiveness by promoting responsible digital autonomy. A detailed comparison of these tools and their effectiveness is presented in Table V.

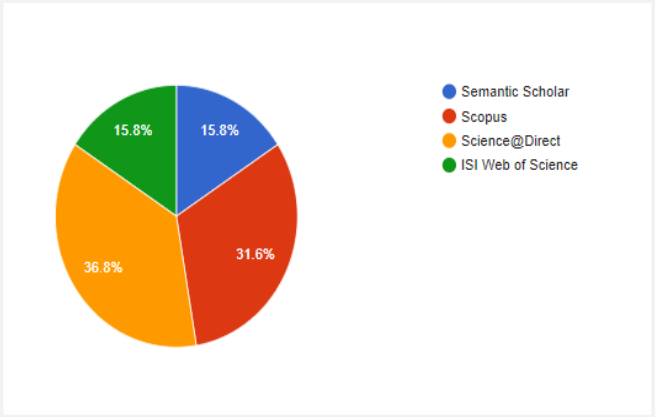

Fig. 2. Distribution percentage of the records identified according to the source of origin.

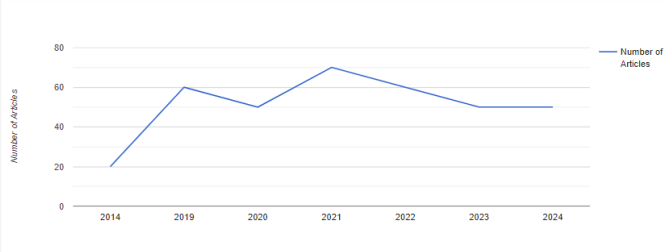

Fig. 3. The trend in the number of articles published between 2014 and 2024.

TABLE IV. IMPACT OF AI ON PARENTAL CONTROL APPLICATIONS

Impact	Benefits	Quote
AI filters content based on the user's age and the sustainability of child behavior.	It prevents children from seeing things they should not.	[11], [13]
AI recommends appropriate educational videos or games for children.	It helps children learn good things and have safe fun.	[9], [11]
AI-powered social media reviews everything before publishing it.	Children can interact online without being exposed to dangerous content.	[11], [13]
The AI detects graphic videos and deletes them or warns the user.	Notify parents or automatically block dangerous content.	[6], [10], [11]
The study says AI is more effective than traditional parental controls.	It is more efficient and reliable than relying on parents alone.	[11], [12]

TABLE V. PARENTAL CONTROL TOOLS

Technological tool	Effectiveness in child safety	Description	Quote
Parental Control Apps	Effective at blocking inappropriate content, but it is dependent on parental involvement.	They allow monitoring and restricting the use of devices.	[6], [10], [12], [17]
Artificial Intelligence (AI)	It is more effective than manual control; it significantly reduces exposure to risky content.	Automatically filters content and suggests age-appropriate material	[11]
Functions embedded in systems	It is useful for beginners but limited in advanced functionalities.	Parental control options are included in operating systems.	[12]
Educational tools	It is very effective in the long term; it promotes digital independence and better habits.	Encourage self-regulation and education about the safe use of technology.	[9], [31]

RQ 3: What are the most effective practices for detecting inappropriate content and adjusting mobile device usage rules in children?

The evidence highlights a combination of technological and behavioral practices. On the technological side, AI-based content filters and behavioral detection algorithms automatically prevent access to harmful material. On the parental side, active supervision, responsible use education, and guided self-management strategies reinforce children's digital resilience [5], [11], [24] .The most effective practices identified are listed in Table VI.

TABLE VI. PRACTICES FOR THE DETECTION OF INAPPROPRIATE CONTENT

Effective Practice	Description	Quote
Using AI to filter content	AI-based tools automatically detect inappropriate content and suggest safe alternatives.	[11], [12]
Behavior detection	Algorithms identify suspicious patterns, such as access to restricted content or interactions with strangers.	[11], [13]
Active parental supervision	Parents review device use and set clear boundaries.	[5], [6]
Responsible use education	Parents teach children to recognize risks and make responsible decisions.	[29], [30], [31]
Open discussions	Parents and children have regular conversations about using technology and the associated risks.	[24]
Guided self-management	Children are allowed to make decisions under initial supervision and constant feedback.	[24]

RQ 4: What level or techniques of restricting inappropriate content do technological parental control tools offer?

The studies analyzed show that parental control tools apply multiple levels of restriction, ranging from automated AI-based filters to user profiles and real-time monitoring. Techniques such as age-based restrictions, app blocking, and activity history reviews are widely used to tailor the digital environment to children's developmental needs [6], [10]. The full set of techniques and their examples are summarized in Table VII.

TABLE VII. TECHNIQUES AND LEVELS OF RESTRICTION

Technique	Description	Example	Quote
Automatic Filtered	Using AI and algorithms to detect and block inappropriate content (words, images, videos)	AI on YouTube Kids filters out content that is not suitable for children.	[5], [6]
Keyword detection	Identification of offensive phrases and replacement with asterisks or warnings.	Big data-based text tools replace offensive phrases with asterisks.	[19], [22]
User profiles	Creation of child profiles to adjust the content according to the child's age.	YouTube Kids and Netflix Kids use AI to show appropriate content for children.	[25], [26]
Age Restrictions	Parents enter the child's age, and the system automatically adjusts the recommendations.	AI controls filter content according to the user's age.	[16]
App Blocking	Blocking inappropriate apps or games for children.	Qustodio and Net Nanny allow specific applications to be blocked.	[14], [27]
Real-time monitoring	Real-time monitoring of children's use of devices.	Screen Time (iOS) allows parents to see which apps their children are using.	[30]
Automatic notifications	Notifications to the parent if the child attempts to access restricted content.	Parental control tools send automatic alerts to parents.	[15], [16], [17]
Activity History	Review of browsing history or use of applications to identify patterns of concern.	Parents review activity history for unusual behaviors.	[5], [6]

E. Bibliometric Analysis

1) Keyword co-occurrence map: The keyword co-occurrence map generated with VOSviewer offers a detailed overview of the thematic relationships in the analyzed scientific literature (see Fig. 4). This map shows 23 elements (keywords), 253 links, and a total connection strength 7194. The visualization uses colors to represent different clusters or thematic groupings, while the size of the nodes reflects the frequency of each keyword's appearance in the articles. The lines connecting the nodes indicate the intensity of the relationship between terms, which allows for identifying significant patterns in the field of study. In addition, the color bar at the bottom of the map indicates the temporal evolution of

the connections between keywords, allowing us to observe how specific topics have gained relevance over time.

One of the emerging core themes is childcare, as evidenced by the prominent presence of the keyword "child". This word is one of the map's most extensive and centralized nodes, suggesting its persistent importance in research. However, when examining the temporary color bar, it can be seen that child-related connections have increased significantly recently, especially from mid-2021 to early 2022. This indicates that research on children has experienced remarkable growth recently due to factors such as the COVID-19 pandemic, the increased use of mobile technologies, and the need to address specific educational and health challenges in this age group.

Another interesting aspect is how the keyword 'child' is strongly interconnected with terms related to mobile technology, such as mobile applications and telemedicine, and educational and healthcare concepts, such as education, healthcare personnel, and self-care. These connections show that current research explores new ways to support children through digital and remote interventions. In addition, terms such as preschool, adolescent, and young adult are closely linked to children, suggesting a broad perspective that addresses different stages of child and youth development.

Finally, the temporal analysis highlights the importance of clinical and methodological studies in child research. Terms such as major clinical study, controlled study, and randomized controlled trial are connected with child, indicating that the scientific community is conducting rigorous and validated research to better understand children's challenges and needs. In addition, terms such as questionnaire and review point to the importance of data collection and the systematic review of previous research, reinforcing the robustness of current findings.

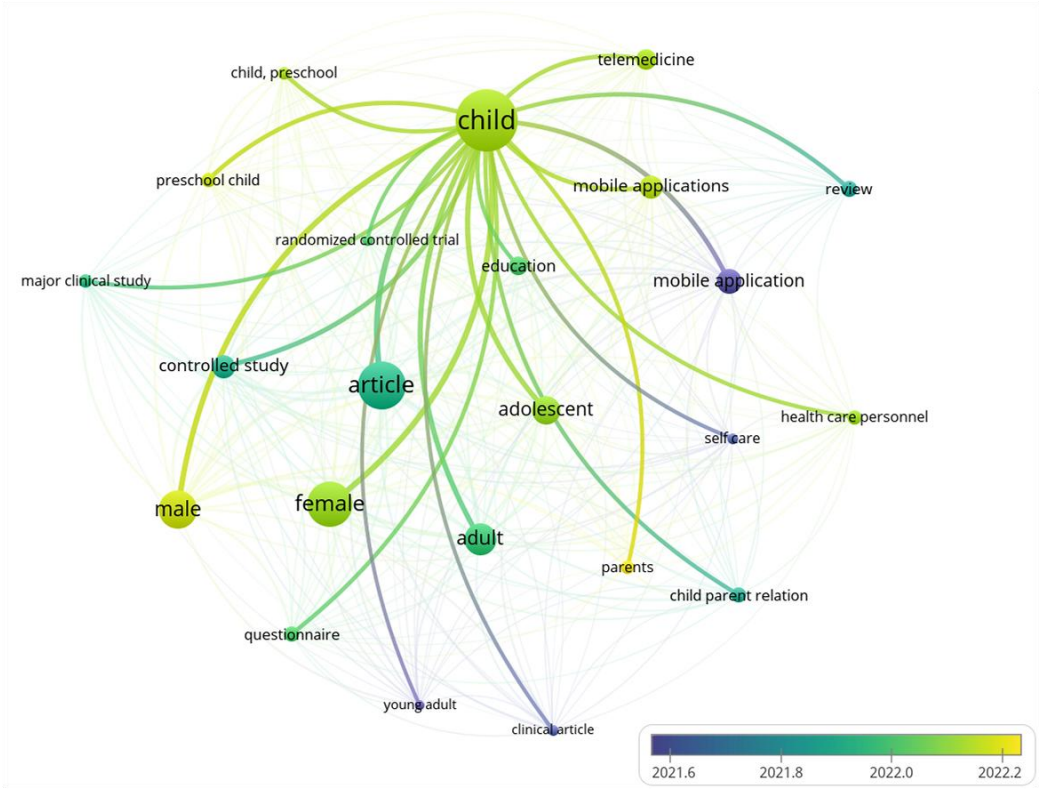

Fig. 4. Keyword co-occurrence map in VOSviewer.

V. Discussion

The results achieved from this systematic review allow us to affirm that the technological tools for parental control are indicated as effective in controlling access to adequate information for children and limiting the time of use of their devices [5]. It is important to note that the final dataset consisted of only 29 studies, despite the identification of nearly 5,000 initial records. This relatively small number results from the strict inclusion and exclusion criteria applied, which removed older publications, studies focusing on adolescents or adults, and those lacking technological or AI-based approaches. While this reduction limited the size of the dataset, it ensured that the review concentrated exclusively on recent, relevant, and methodologically robust evidence. Therefore, the number of included studies should not be seen as a weakness but rather as a reflection of the stringent standards required to maintain rigor and focus in this systematic review. Applications that contain artificial intelligence (AI) are remarkable for providing advanced possibilities for adapting to user limitations and adjusting to how the child uses the application. This adaptation of constraints to use improves the technology experience. It promotes responsible use, vital in a context where children increasingly have access to mobile devices [28]. As summarized in Table V, different parental control tools vary in their effectiveness: while AI-based solutions significantly

reduce exposure to inappropriate content, traditional apps remain dependent on parental involvement, and educational tools show long-term benefits by promoting digital autonomy.

The second aspect of some interest that derives from the studies analyzed is the variety of methodologies used to analyze the validity of these tools. For example, some studies have used surveys of parents to verify that children had less access to inappropriate material; other studies have instead used the analysis of data from the applications themselves to measure the time of use and the manner of children's access to the information. This evident variety of methodologies used explicitly mentions the complexity of the problem and has also shown the need to conceptualize parental control from a set of methodological approaches [29], [30]. As seen in Table II, although most studies describe their methodologies and target populations clearly, fewer provide comprehensive comparisons between manual and automated parental control, showing heterogeneity in methodological rigor.

However, despite the positive results, there are important limitations in the evidence that supports this review. As an example, several of the included studies have a small sample size, which complicates the generalization of the results and their applicability to specific broader contexts [20], [32], [33]. Many studies focused on specific groups of children and their parents, which might not represent the families' experience. The lack of common standards to measure the usefulness of parental control applications also reduced the validity of the reported results, limiting the possibilities of comparing studies and, therefore, being able to draw definitive conclusions. These concerns were addressed from the beginning by applying strict inclusion and exclusion criteria (Table I), which ensured that only recent, open-access, and relevant studies were retained, but still revealed gaps in generalizability.

On the other hand, the review process used has inherent limitations that must be considered. Although rigorous criteria were used to select the articles, relevant works may have been excluded because of the exclusion of specific bases or languages. The selection of the search terms may also have limited the identification of the key research, rejecting articles that could have contributed to this review.

The central question posed by the analysis of mobile applications for the responsible management of access to digital content is the relationship between technology and children's development. Thus, although the applications offer practical solutions to parents, the risks of excessive mobile device use must be explicit. Studies indicate that excessive use of mobile devices can negatively influence children's attention, school performance, and social-emotional development [21]. The techniques identified in this review (Table VII) illustrate how diverse strategies—such as automatic filtering, keyword detection, real-time monitoring, and user profiles—are being implemented to mitigate these risks, although their lack of standardization reduces comparability across studies.

The research results reflect the need not to leave everything available, from management to education, only to parental control applications. Parents must be actively involved in their children's digital education, establishing clear margins and limits and leading a conversation about the responsible use of technology over time. Consequently, the analysis has important conclusions for parents, educators, and app developers. The good news is the social acceptance of the relationship between the use of technology and the management of food access by parents, as well as the integration of technologies based on Artificial Intelligence in managing children's access to digital content through applications. Improvements in these tools could better suit every child and family, most likely translating into greater effectiveness. It is also necessary to focus on those who develop the software to create agile and simple applications used by all families, regardless of the technological capabilities of each parent or caregiver [9], [10].

Future research must be proposed using larger cultural and demographic diversity samples. The richness of this initial research has to be in finding the uses made of these tools in different families and the most interesting characteristics in other contexts; it could also be interesting to check in what way the virtuality of these applications can be effective in the long term, especially about the effects of the tools on the emotional or cognitive development of the child. Investigating how access to digital or non-digital content can change children's behavior and health can yield fascinating information that can be used to refine tools or optimize their use.

VI. Conclusion

Through this work, it has been possible to understand how applications for controversial mobile devices protect minors regarding inappropriate content and device use, thus generating a safer and more responsible digital environment. We found that tools compatible with secure browsers, content filters, or real-time monitoring have made important developments in blocking potentially dangerous or inappropriate content. Existing solutions use innovative techniques, such as geofencing, which allows the entire family to control children's use of their devices or other devices in the family environment. However, we have also found significant issues related to privacy and transparency. Many of these tools handle a large amount of personal data without the explicit consent of users, which raises important ethical and regulatory concerns. This highlights the need to create stricter regulatory frameworks that balance digital protection with respect for minors' rights and ensure their information is not misused.

On the other hand, artificial intelligence has been positioned as an excellent ally in responsibly managing children's mobile device use. AI-based applications can offer advanced functionalities that are complementary to traditional palliative strategies. These include detecting problematic patterns of use, anticipating risks before they have materialized, customizing the rules of use based on the specific behavior of each child, and more. Thus, they allow parents to adopt a more proactive and adaptive role in supervising digital devices. However, these technologies still present important barriers, such as their lack of economic accessibility, the technological infrastructure they require, and the lack of simple tools for families without advanced technical knowledge. In short, although these technologies represent essential advances towards a safer digital environment, there is still work to make them effective, accessible, and ethical so that they can be adopted in the daily

lives of all families without distinction of resources or knowledge.

To validate the findings of this review, the results were contrasted across different methodological approaches, including parent surveys and application usage data analysis, which consistently reported improvements in content filtering and screen time regulation. Furthermore, our synthesis shows convergence between studies using traditional parental control apps and those incorporating AI-based solutions, reinforcing the reliability of the conclusions. Compared with similar reviews in the field, which often focused narrowly on screen time or content filtering, this study provides a more holistic perspective by integrating technological, cognitive, and ethical dimensions. This comparative approach not only validates the robustness of our analysis but also highlights the distinct contribution of this review: the identification of both strengths and persistent gaps in AI-based parental control applications.

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