

# Systematic Mapping Study on Serious and Educational Digital Games for the Prevention, Awareness, and Combating of Sexual Violence

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**Abstract.** *This paper aims to systematically identify and characterize existing serious and educational digital games focused on sexual violence, analyzing their narrative strategies, development methodologies, game mechanics, educational purposes, target audience, among other features. For this study, we defined database searches, such as IEEEExplore, ACM, Scopus and ERIC. Eight papers were analyzed and revealed trends in game design, such as narratives including interactive storytelling and scenario-based learning. Limited long-term impact assessments and cultural adaptability were identified. These insights provide actionable recommendations for researchers, educators, and developers to enhance the efficacy of future games in this critical domain.*

## 1. Introduction

Sexual violence is defined as “any sexual act, attempt to obtain a sexual act, unwanted sexual comments or advances, or acts to traffic, or otherwise directed against a person’s sexuality using coercion, by any person regardless of their relationship to the victim, in any setting” [Krug et al. 2002]. It remains a global issue that demands innovative strategies for prevention, awareness, and combat. According to the World Health Organization (WHO), effective interventions must combine protective measures with educational approaches that empower individuals from childhood [Finkelhor et al. 2022]. Digital tools, such as serious and educational games, have gained prominence for their ability to engage users through interactive scenarios, simulating real-world challenges while fostering critical thinking and preventive behaviors. However, the ethical and practical application of these tools in educational settings requires deeper exploration to maximize their societal impact.

Serious games, specifically designed for purposes beyond entertainment, offer unique opportunities to address sensitive topics like sexual violence. Studies suggest their potential to promote awareness and preventive actions through immersive storytelling and decision-making mechanics [Djaouti et al. 2011]. Despite this promise, there is a lack of systematic analyses evaluating their effectiveness, design methodologies, and long-term outcomes in combating sexual violence. This gap highlights the need for a consolidated understanding of how game mechanics, narrative styles, and accessibility features, among other, contribute to educational outcomes and user engagement.

This paper aims to systematically map the literature on serious and educational digital games focused on sexual violence prevention, awareness, and combat strategies.

By analyzing existing studies, we seek to identify design trends and effectiveness and provide actionable insights to educators, developers, and policymakers. Our findings aim to strengthen evidence-based practices in game development, contributing to safer educational environments and empowering vulnerable populations through technology.

Eight publications were selected for data extraction. The analysis of these selected studies revealed that serious games addressing sexual violence frequently incorporate interactive storytelling and scenario-based learning to enhance engagement and educational impact. However, significant gaps were identified, including a lack of long-term impact assessments, limited cultural adaptability, and insufficient integration of evaluation frameworks to measure educational effectiveness. Additionally, most games targeted adolescents and young adults, with a predominant focus on digital platforms such as mobile and web-based applications. These findings suggest that while serious games present promising strategies for addressing sexual violence, further refinement is needed to ensure their broader applicability and long-term effectiveness.

The paper is structured as follows: Section 2 reviews related work on serious games and sexual violence prevention. Section 3 details the research methodology. Sections 4 and 5 present quantitative results and findings organized by research sub-questions. Section 6 discusses implications and limitations, while Section 7 presents conclusions and future work.

## **2. Related Work**

The related works were identified during our participation in the PROTECA Extension Project (Projeto de Prevenção ao Aliciamento de Crianças e Adolescentes, UFPR – Project for the Prevention of Child and Adolescent Grooming), in which we conducted searches on serious and educational digital games for the prevention, awareness, and combating of sexual violence. Among the studies found, and stand out due to their relevance to our research scope.

Barrera Yañez et al. (2023) reviewed digital resources aimed at gender equality, including serious games. The study highlighted that most initiatives seek to raise awareness among adolescents about gender violence by using immersive narratives and exposure to critical situations. Although effective in promoting empathy, many of these resources lack scientific validation and broad availability. Furthermore, the study does not specifically address sexual violence, limiting its applicability to this theme.

Asadzadeh et al. (2022) proposed a framework for the use of digital games and virtual reality in the prevention of child abuse. They categorized the applications into six areas, including screening and treatment. Despite their potential, there is a lack of longitudinal studies assessing the effectiveness of these resources and little exploration of the use of games for sexual violence involving adults or community contexts.

The systematic mapping study presented by Cardouzo et al. at SBGames 2024 analyzed the classification of genres in games and its impact on player perceptions. The study emphasized the need for more inclusive and representative digital games, although it did not specifically focus on the prevention of sexual violence. However, its findings reinforce the importance of addressing gender-related themes in digital games. Additionally, this paper provided insights into how genre classification affects player

experiences and perceptions in digital games. While it does not directly tackle sexual violence, its findings highlight the significance of representation and gender awareness in game design, which is relevant to our research scope.

Other initiatives, such as *Grace's Diary* [GP Touch 2010] and *Chuka* [Gargamel Estudio 2018], cited by Barrera Yañez et al. (2023) demonstrate the potential of interactive narratives in tackling gender-based violence and child abuse.

These relate work provide relevant contributions, however, they also highlight significant gaps, not only due to the lack of longitudinal studies or restriction to specific audiences but primarily in their thematic depth. By focusing on broader categories like "gender violence" or exclusively on "child abuse," the existing literature fails to provide a dedicated analysis of the vast and complex landscape of sexual violence itself. Crucial topics often remain untreated or are diluted within these wider discussions. For instance, there is a lack of systematic reviews analyzing digital games that specifically address the nuances of consent, the psychological impacts of sexual assault (rape), mechanisms to combat victim-blaming, strategies for effective bystander intervention, or emerging challenges like digital sexual violence. This research, therefore, is essential as it seeks to fill these specific thematic gaps, offering a focused analysis of how digital games address sexual violence in its multiple dimensions and adopting a rigorous methodological approach for this purpose.

### 3. Research Methodology

The protocol of this Systematic Mapping Study (SMS) followed the guidelines established by Kitchenham and Charters (2004). The objective of this SMS, based on the Goal-Question-Metric (GQM) paradigm (Basili & Rombach, 1988), is to **analyze** scientific publications, **with the purpose of** identifying and characterizing, **regarding** the design, development, and evaluation of serious and/or educational digital games used for the awareness, prevention, and combat of sexual violence, **from the perspective of** researchers in serious and educational digital games, **in the context of** primary sources available in the ACM, IEEEExplore, Scopus, and ERIC search engines.

The primary research question of this SMS is: "*What are the serious and/or educational digital games that have been designed, developed, and/or evaluated for raising awareness, preventing, and combating sexual violence?*" In addition to this main question, subquestions related to the environment of the analyzed games were defined and are presented in Table 1, which displays each subquestion, the possible associated answers, and the distribution of games according to these answers and percentages. The selected search languages were Portuguese and English. English was chosen because the majority of published academic works are in this language, while Portuguese was included as it is the native language of the authors.

A search string was defined based on the PICOC (*Population, Intervention, Comparison, Outcome, and Context*) criterion [Kitchenham e Charters 2007], considering three essential components: (1) Population – Represents the study's context, i.e., sexual violence; (2) Intervention – Refers to the serious and/or educational digital games; and (3) Outcome (Results) – Refers to the contributions of the identified initiatives, including aspects related to the design, development, and evaluation of games focused on prevention, combat, and awareness of sexual violence. This SMS

aims to characterize, rather than compare, the identified initiatives. For this reason, the Comparison and Context criteria of PICOC were not applied in the search string.

Research Subquestions	Possible Answers	Games	Percentage
SQ1. What type of game?	Simulation	4	66.67%
	Puzzle	1	16.67%
	Slot Machine	1	16.67%
	Board Game	1	16.67%
SQ2. What is the educational purpose of the game?	Awareness	6	100%
	Prevention	4	66.67%
	Combating	1	16.67%
	Skill and Competency Development	2	33.33%
SQ3. What is the target audience of the game?	Children	3	50.00%
	Parents	1	16.67%
	University Students	1	16.67%
	University Professors	1	16.67%
	University Staff	1	16.67%
	Adults with Disabilities	1	16.67%
	Healthcare Professionals	1	16.67%
	Adolescents	0	0.00%
	Women	0	0.00%
SQ4. What is the game genre?	Adventure	4	66.67%
	Trivia or Quiz	1	16.67%
	Virtual Board Game	1	16.67%
	Augmented Reality Game	1	16.67%
SQ5. What narrative is adopted in the game?	Linear	1	16.67%
	Branching	3	50.00%
	Interactive	2	33.33%
SQ6. What is the identified game format?	Pixel Art	0	0.00%
	Realistic Graphics	1	16.67%
	Stylized Graphics	5	83.33%
SQ7. What platform does the game run on?	Computers	4	66.67%
	Mobile Devices	3	50.00%
	Web	1	16.67%
	Not Specified	1	16.67%
SQ8. Did the game undergo a quality evaluation?	Yes	6	100.00%
	No	0	0.00%
SQ8.1. What quality criteria were evaluated in the game?	Usability	6	100.00%
	User Experience	3	50.00%
	Accessibility	1	16.67%
SQ9. Does the game address ethical, cultural, and sensitivity issues when dealing with the theme of sexual violence?	Yes	6	100.00%
	No	0	0.00%

**Table 1. Distribution of responses for each subquestion. This table presents the final data extracted from the primary studies selected after the 2nd filter**

The search string used in this SMS was structured as follows: ("sexual violence" OR "sexual assault" OR "sexual abuse" OR "sexual violence against" OR "sexual exposure" OR "sexual exploitation") AND ("educational games" OR "serious games" OR "learning games" OR "instructional games") AND ("design" OR "implementation" OR "development" OR "evaluation" OR "assessment").

For the selection of papers, inclusion criteria (IC) and exclusion criteria (EC) were defined. The inclusion criteria considered publications that address the design, development, and/or evaluation of serious or educational games in the context of preventing, combating, and awareness of sexual violence (**IC1**), as well as publications that present experimental studies of serious or educational games within the same context (**IC2**). The exclusion criteria encompassed publications that do not meet the inclusion criteria (**EC1**), are not written in English or Portuguese (**EC2**), are not available for consultation or open-access download (**EC3**), are duplicates already selected in another database (**EC4**), or have not undergone peer review, such as gray literature (**EC5**).

The paper selection process occurred in two stages: the first filter and the second filter, both analyzed by three researchers. In the first filter, the title and abstract of each paper were read, applying the inclusion and exclusion criteria to assess their relevance. For each excluded paper, a justification was recorded. In the second filter, a full reading of the previously selected papers was conducted, applying the same criteria to determine their definitive inclusion in this SMS. The search was conducted in April 2024.

Both selection stages were performed using the Porifera tool [Campos et al. 2022]. In each phase, three researchers individually analyzed the papers retrieved from the databases and later discussed any disagreements. In all cases of divergence, a consensus was required to decide on the acceptance or rejection of a paper. In first filter, an agreement of 67.42% was achieved, with a Kappa index [Fleiss 1971] of 0.635, classified as “good.” In the second filter, the result was an agreement of 85.71%, with a Kappa index of 0.7341, also considered “good.”

#### 4. Quantitative Results

When the search string was applied to the digital libraries, a total of 132 papers were returned (43 from ACM Digital Library, 74 from IEEEExplore, 12 from Scopus and 3 from ERIC). In the first filter, all 132 papers were evaluated by the researchers for relevance to the study topic. During this step, inclusion and exclusion criteria based on title, abstract and keywords were applied, resulting in the selection of 42 papers (15 from ERIC, 20 from Scopus and 7 from IEEE). In the second filter, the 42 papers selected in the first step were further analyzed, considering the methodology, objectives and results presented, resulting in the final selection of 8 papers for data extraction.

The selected studies were published between 2010 and 2023. Most of the papers were published in 2014 and 2020 (2 papers), followed by 2010, 2018, 2021 and 2023 (1 paper). There was a rise in publications between 2018 and 2021, a period in which there was greater interest in the use of serious games for training and awareness and on topics related to security and prevention of violence. The most recent paper was published in 2023, while the oldest is from 2010, highlighting the evolution of the field over the years.

In this SMS, the publication venues of the papers were analyzed. There was no concentration of papers in a single conference or journal, with each event and periodical

containing only one publication. The conferences included *CHI EA '23*, *ASSETS '20*, and *BCS-HCI 2010*. The journals covered *Child Abuse & Neglect*, *Computers in Entertainment (CIE)*, *Malaysian Journal of Nursing*, *International Journal of Inclusive Education*, and *Frontiers in Psychology*. These journals and conferences focus on research related to serious games aimed at violence prevention and child protection. The conferences and periodicals for each paper can be consulted in the Technical Report of this SMS, published at <https://doi.org/10.6084/m9.figshare.28807169.v1>.

## 5. Results by Sub-Question

### 5.1. SQ1. Types of Games Identified

The types of games identified in this SMS fall into four main categories: “simulation”, “puzzle”, “slot machine”, and “board game” (Table 1). Among these, “simulation” is the most prevalent type, present in 66.67% (N = 4) of the analyzed games. The other types—“puzzle”, “slot machine”, and “board game”—are equally distributed, each representing 16.67% (N = 1).

It is important to highlight that some games belong to more than one category. For instance, the game *Orbit* combines elements of “simulation” and “puzzle”, offering a more diverse and interactive experience. This combination allows players to explore simulated scenarios while solving logical challenges. According to Jones et al. (2020), Scholes et al. (2014), and Stieler-Hunt and Jones (2014), *Orbit* stands out as a *serious game* aimed at preventing child sexual abuse, recognized as an effective approach to teaching children how to identify and avoid risky situations. This strategy makes learning more dynamic and engaging, increasing player involvement.

### 5.2. SQ2. Educational Purpose of the Game

The analysis reveals that 100% of the examined games (*StepUp & StepIn*, *Boundaries*, *Caixa de Pandora*, *Orbit*, *Being Safety Smart*, and *Snake and Ladder*) were classified as having the educational purpose of raising “awareness” about sexual violence. This result demonstrates that all games place significant emphasis on sensitizing players to the existence and impact of this type of violence.

Regarding “prevention”, two-thirds of the games (66.67%, N = 4) were also classified with this objective. Games such as *StepUp & StepIn* [Schlesener et al. 2023] and *Orbit* [Jones et al. 2020] aim to educate players on how to identify and prevent risky situations related to sexual violence. On the other hand, games like *Boundaries* and *Caixa de Pandora* were not categorized under the “prevention” purpose, suggesting variations in the emphasis placed on this aspect among the analyzed games.

About “combatting sexual violence”, only *Caixa de Pandora* was classified with this purpose, representing 16.67% (N = 1) of the games [Almeida et al. 2018]. This finding highlights a gap in approaches focused on directly addressing sexual violence, as most games prioritize “awareness” over concrete combat actions.

In terms of “skills and competencies development”, only *Being Safety Smart* and *Snake and Ladder* were categorized with this purpose, accounting for 33.33% (N = 2) of the analyzed games [Jones e Pozzebon 2010, Saleha et al. 2021]. These games focus on strengthening practical abilities, particularly those related to safety and risk management.

### 5.3. SQ3. Target Audience of the Game

The SQ3 results reveal that 50% of the analyzed games (*Orbit*, *Being Safety Smart*, and *Snake and Ladder*) primarily target “children.” This finding reflects the focus of serious digital games on educating and protecting children from sexual violence by addressing personal safety topics in an accessible and interactive manner.

Other target groups were also identified, each represented by 16.67% (N = 1) of the games, including “Parents”, “University Students”, “University Professors”, “University Staff”, “Adults with Disabilities”, and “Healthcare Professionals”. In the study by Schlesener et al. (2023), the game *StepUp & StepIn* was specifically designed for university students in the United States, as well as for professors and university staff, aiming to promote bystander intervention in cases of sexual harassment on campus [Schlesener et al. 2023]. Meanwhile, the game *Boundaries* is targeted at people with disabilities and educates them about relationship boundaries [Conde 2020].

### 5.4. SQ4. Game Genre

The results indicate that the “Adventure” genre is the most frequent among the analyzed games, representing 66.67% (N=4) of the cases. Examples include *Boundaries*, *Caixa de Pandora*, *Orbit*, and *Being Safety Smart*. These games employ engaging narratives that combine exploration and interaction, characteristics typical of the adventure genre. The “Trivia or Quiz” genre appears in 16.67% (N=1) of the games, represented by *Caixa de Pandora*, which includes interactive challenges in a question-and-answer format to engage players and promote learning about violence against women.

“Virtual Board Games” also account for 16.67% (N=1), exemplified by *Snake and Ladder*. This game adopts a board-based approach to teach children personal safety skills. Finally, “Augmented Reality Games” are present in 16.67% (N=1) of the games, such as *Step Up & Step In*. This game stands out by using immersive technologies to simulate sexual harassment situations, training players to intervene as bystanders.

### 5.5. SQ5. Narrative Style adopted in the Game

The narrative styles adopted in serious and educational games aimed at preventing sexual violence are divided into three main categories: “Linear,” “Branching,” and “Interactive.” Among the analyzed games, half (50%, N=3) use a “Branching” narrative, as seen in *Orbit*, *Caixa de Pandora*, and *Boundaries*. This type of narrative allows players to make choices throughout the game, which can enhance immersion and facilitate the internalization of educational content by exploring different consequences based on player decisions.

The “Interactive” narrative appears in 33.33% (N=2) of the games, including *Step Up & Step In* and *Being Safety Smart*. This narrative model encourages players to actively participate in decision-making, increasing engagement through interactions that reflect real-world scenarios and the application of safety and intervention skills. Finally, 16.67% (N=1) of the games use a “Linear” narrative, such as *Snake and Ladder*, where progression occurs in a direct and predetermined manner without significant variation in player choices. This structured approach can be suitable for conveying information in a more controlled manner, especially in games addressing sensitive topics.

## 5.6. SQ6. Identified Game Format

The results for the sub-question regarding game format indicate a preference for visual styles that promote engagement and accessibility. The majority of the games (83.33%, N=5) use “Stylized Graphics,” as seen in *Orbit* and *Boundaries*. This format aims to combine visual appeal and simplicity, facilitating comprehension and interaction, especially for younger audiences and educational contexts.

On the other hand, 16.67% (N=1) of the analyzed games employ “Realistic Graphics,” such as *Step Up & Step In*. The use of realistic graphics can be effective in conveying sensitive topics, making the player’s experience closer to real-life scenarios and increasing the impact of educational messages. No games were found to use “Pixel Art” as their graphical format. This absence may reflect a tendency to avoid excessively simplified or nostalgic styles, which might not be suitable for the serious theme of sexual violence prevention and awareness. Additionally, the choice of visual style appears guided by the need to balance engagement with the respectful treatment of sensitive content, as overly simplistic or retro aesthetics could reduce the perceived seriousness and educational impact of the games.

## 5.7. SQ7. Platforms on which the games run

The majority of the analyzed games were developed for “Computers” (66.67%, N=4). Examples include *Boundaries*, *Caixa de Pandora*, *Orbit*, and *Being Safety Smart*, which leverage this platform’s graphical and processing capabilities to provide a more robust experience. The second most common platform is “Mobile Devices” (50.00%, N=3), with games such as *Caixa de Pandora*, *Being Safety Smart*, and *Step Up & Step In*. This choice reflects the trend of using portability and accessibility features offered by smartphones and tablets, allowing educational content to reach a broader audience.

Additionally, the “Web Platform” is used in 16.67% (N=1) of the games, represented by *Being Safety Smart*. Web-based access eliminates the need for additional software installation, facilitating the dissemination and usability of the game across different contexts and devices. The paper does not explicitly specify the platform on which *Snake and Ladder* was developed, representing 16.67% (N=1) of cases with missing information.

## 5.8. SQ8. Game Quality Evaluation

The results indicate that all the games analyzed (100%, N=6) underwent some form of quality evaluation. This reflects the developers’ commitment to validating the effectiveness and experience provided by the games. For example, *Step Up & Step In*, an Augmented Reality game evaluated for its applicability in training intervention in university sexual assault. The study involved faculty and students (sample size not disclosed), resulting in a 27% improvement in the perception of intervention effectiveness.

The game *Orbit* underwent a randomized experimental study to test its effectiveness in preventing child abuse. The research involved 139 children (ages 6-10), with 34 in the control group. The results showed a significant increase in the children’s knowledge about prevention, with a delta of 31.5% in the experimental group compared to 4.2% in the control group. *Being Safety Smart* focused on knowledge retention regarding

abduction prevention, involved 107 children (ages 6-8), where the experimental group scored an average of 31/35 compared to 24/35 in the control group.

In the game *Boundaries*, designed to reflect on interpersonal boundaries for people with disabilities, 10 adults (5 men and 5 women, ages 20-35) participated. The results showed that 78.8% of participants reported increased awareness about boundaries, with an increase of 1.54 points on the perception scale. The game *Caixa de Pandora* underwent an evaluation to measure changes in healthcare professionals' behavior when assisting victims of violence. The study involved 84 professionals, including doctors, nurses, and agents, resulting in an 11.3% increase in theoretical knowledge after the intervention. Even in cases where the game's objectives were more specific, such as in *Snake and Ladder*, which teaches personal safety skills for children, the quality was assessed. The study compared two teaching methods in 107 preschoolers (ages 3-6), showing that the group using the board showed an average increase of 2.33 points, while the group using the book had an increase of 1.70 points.

### 5.9. SQ8.1. Quality Criterion Evaluated in the Games

Based on the results, it can be observed that “Usability” was the most frequently evaluated quality criterion in the games analyzed, being present in 100% (N=6) of them. Usability is defined by the ISO 9241-11:2019 standard as “the degree to which a product can be used by specific users to achieve specific goals with effectiveness, efficiency, and satisfaction in a specific context of use”. All the games, such as *Step Up & Step In*, *Orbit*, and *Being Safety Smart*, underwent analyses to ensure that the interactions and functionalities were intuitive and appropriate for the target audience.

“User Experience” was evaluated in 50% (N=3) of the games, including *Boundaries*, *Caixa de Pandora*, and *Being Safety Smart*. ISO 9241-210:2019, it refers to “a person's perceptions and responses resulting from the use or anticipation of the use of a product, system, or service.” This criterion reflects the concern in creating an engaging and meaningful experience for the players, focusing on emotional and perceptual aspects during the use of the game.

“Accessibility” was considered in 16.67% (N=1) of the games, specifically in the case of *Boundaries*. According to Barbosa et al. (2021), accessibility is related to the user's ability to access and interact with a system without barriers imposed by the interface, ensuring that users with different needs can use it. This analysis highlights the importance of ensuring that the game is inclusive and accessible to diverse audiences.

### 5.10. SQ9. Ethical, cultural, and sensitivity issues

Based on the results, all the analyzed games (100%, N=6) addressed ethical, cultural, and sensitivity issues when dealing with the sensitive topic of sexual violence. This data reflects the developers' concern to approach the subject responsibly, ensuring that the messages conveyed are appropriate for the target audience and the cultural contexts in which the games will be used.

The game *Orbit* adopts a sensitive approach to teaching children protective skills against sexual abuse, using narratives that respect the children's age group. Similarly, *Step Up & Step In* promotes bystander intervention in cases of sexual harassment in university environments, considering cultural diversity and the importance of empathy in

this context. Games such as *Caixa de Pandora* and *Boundaries* address issues related to violence against women and relationship boundaries, using narrative and graphic strategies that ensure the ethical and culturally appropriate treatment of these topics.

## 6. Discussion

The results reveal that serious and educational games focused on preventing, raising awareness about, and combating sexual violence predominantly employ simulations (66.67%) and adventure narratives (66.67%), strategies that prioritize immersion in realistic or interactive scenarios to engage players. The emphasis on awareness (100%) reflects an educational approach centered on sensitization, as seen in games like *Orbit* and *Caixa de Pandora*, which teach children and healthcare professionals to identify risks. However, the scarcity of games focusing on direct combat (16.67%) or practical skill development (33.33%) highlights a critical gap: the need for mechanics that go beyond awareness to empower players with concrete actions, such as real-life intervention.

The analysis of target audiences shows that children are the primary focus (50%), while teenagers and women—populations disproportionately affected by sexual violence—lack dedicated games. This absence suggests opportunities for projects addressing issues like consent in adolescent relationships or female empowerment. Furthermore, the preference for stylized graphics (83.33%) over realism (16.67%) underscores a balance between engagement and age-appropriateness, although games like *Step Up & Step In* demonstrate that realism can effectively train adults in complex scenarios, such as campus harassment.

Quality evaluation emerged as a strength: all games underwent validation, with a focus on usability (100%) and user experience (50%). Outcomes such as a 31.5% increase in prevention knowledge (*Orbit*) and 27% improvement in intervention efficacy (*Step Up & Step In*) reinforce the potential of these tools. However, the lack of longitudinal studies limits understanding of long-term impacts. Finally, the ethically and culturally sensitive treatment in all analyzed games (100%) highlights a commitment to avoiding stereotypes and retraumatization, aligning with international guidelines for responsible design in sensitive contexts. Despite progress, gaps remain: the underrepresentation of immersive technologies (e.g., virtual reality), the lack of games for marginalized groups, and the need to integrate active combat strategies against violence.

## 7. Conclusions and Future Work

This paper presented the results of a Systematic Mapping Study (SMS) that aimed to answer the following central research question: “Which serious and educational digital games have been designed, developed, or evaluated with a focus on raising awareness, preventing, and combating sexual violence?” To address this question, a formal protocol was followed, and automated searches were conducted in the ACM, IEEE, Scopus, and ERIC databases. A total of 132 publications were initially retrieved, of which only 8 met the inclusion criteria after a two-stage selection process conducted independently by three researchers. The process achieved Kappa indices ranging from 0.635 to 0.741, indicating good inter-rater agreement.

The selected studies identified six serious and educational digital games that directly address the theme of sexual violence: *StepUp & StepIn*, *Boundaries*, *Caixa de*

Pandora, Orbit, Being Safety Smart, and Snake and Ladder. These games have been designed, developed, or evaluated with the intent to raise awareness, promote prevention strategies, and support educational efforts to combat sexual violence. Notably, three of the included articles focus on the game Orbit, emphasizing its relevance and prominence in this field.

This study has some limitations. The restriction to specific databases and languages may have led to the exclusion of relevant research published in other cultural and linguistic contexts. Also, the small sample size (8 papers) reflects the overall scarcity of academic initiatives dedicated to this specific topic, underscoring the need to expand the scope in future reviews. Furthermore, the analysis of the evaluation methodologies employed in the primary studies, such as the types of instruments used, their validity, and reliability, was not deeply explored in this SMS, representing an opportunity for future in-depth analysis. In addition, exclusion criterion EC3 (studies not available for consultation or open-access download) eliminated about 10% of the initially retrieved papers. While necessary for ensuring accessibility and reproducibility, this decision may have limited the diversity of perspectives included, and thus should be considered a limitation of this SMS. To mitigate the selection bias, the process was conducted independently by three researchers, with consensus achieved in all cases of disagreement.

For future work, based on the identified gaps, we propose the development of new games or the significant enhancement of existing ones. Specifically, future games should incorporate practical combat mechanics, such as realistic decision-making scenarios where players can practice intervention techniques (e.g., de-escalation strategies, how to support a victim, or how to safely report an incident), moving beyond awareness to empower users with actionable skills. The use of immersive technologies, such as Virtual Reality (VR), could be implemented on multi-platform approaches (e.g., standalone VR headsets or mobile-based AR) to create emotionally resonant and safe environments for practicing these skills, thereby potentially increasing engagement and knowledge retention. It is crucial to prioritize underrepresented audiences, such as adolescents and women, through interactive narratives focused on themes like consent, identifying signs of abusive relationships, and empowerment. Additionally, longitudinal studies are essential to assess the sustained impact of these games, and the creation of culturally adaptive evaluation frameworks is recommended to ensure that the solutions are sensitive to diverse sociocultural contexts.

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