A PRELIMINARY QUANTITATIVE STUDY ON THE PARENTAL ROLE IN PROTECTING CHILDREN FROM ELECTRONIC BLACKMAIL: THE CASE OF DUBAI/U.A.E.

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ABSTRACT

The swift integration of information technologies has resulted in the pervasive utilization of social networking sites, with students emerging as some of the most frequent users. Consequently, this increased engagement exposes students to potential cyber intrusions. This preliminary quantitative study aims to investigate the role of parents in safeguarding their children against electronic hackers and guiding them in the effective and secure use of information technologies. The research involved conducting a survey that considered various demographic factors, with a particular focus on the educational level of parents. The findings underscore the crucial need for parents to take an active role in protecting their children, even when the children themselves are proficient in the use of these technologies.

Keywords: *Parental Control, Online Threats, Security, Privacy, Social Media*.

1. INTRODUCTION

Undoubtedly, the well-being of the youth plays a pivotal role in steering the growth and progress of any society. Therefore, it becomes imperative to address potential challenges that the youth might encounter to ensure the prosperity of the community. Over the past few decades, numerous studies [1–4] have delved into teenagers' use of the Internet and smart devices, unequivocally demonstrating that social media serves as a powerful tool for interpersonal communication. In contemporary society, it is deemed a life necessity. Regrettably, amidst these benefits, a surge in problems related to hacking and privacy breaches [5] has been observed. Astonishingly, a considerable number of teenagers harbor the belief that they are not susceptible targets for hackers and, therefore, are immune to cyber-attacks [6]. Consequently, this age group finds itself exposed to various electronic intrusions, privacy breaches, and instances of electronic blackmail. The prevalence of such issues underscores the critical need for heightened awareness and proactive measures to protect the youth in their digital interactions.

The prevalence of online bullying among young people has notably risen, as reported by a clinic in the UAE [7]. Over the past two years, the clinic has witnessed a surge in the number of young patients seeking assistance for cyberbullying-related issues. The accompanying report highlights a concerning trend where parents are either uninformed or indifferent to the practice of falsifying their child's date of birth to access social media apps and websites. Moreover, the report underscores the potential severity of consequences associated with the common practice among teenagers of sharing personal information online, including messages, photos, or videos. This escalation in online bullying emphasizes the critical importance of raising awareness and implementing measures to safeguard young individuals from the detrimental effects of cyberbullying.

According to the Norton Life Look Cyber Safety Report [8], a substantial 80% of parents express deep concerns about the potential victimization of their children through identity theft. This worry is particularly pronounced when children share personal information on social media or unknowingly download apps that may have been compromised. While 73% attribute this concern to actions they may have failed to take, such as not securely storing documents or inadequately monitoring their children's online activities, an additional 68% acknowledge that their own actions might have inadvertently placed their children at risk. Recognizing the urgency to shield their children

from this imminent electronic danger, there is a clear call for assistance.

It is imperative that parents actively engage and guide their children, periodically assessing and supervising their online interactions. Researchers have underscored the crucial role parents play in safeguarding their children from the hazards associated with social networking sites and internet usage. Many parents emphasize the necessity of their involvement in protecting their children from electronic threats, as they attest to the ease with which feelings can be manipulated, and children can be lured or blackmailed despite their proficiency in using these technologies.

As part of a prior study [9] focusing on the society of the Kingdom of Saudi Arabia, researchers are currently conducting a parallel investigation into the Emirati society.

The overarching goal of this study is to delve into the role of parents in shielding their children from diverse electronic threats, emphasizing the need for continued research and awareness in this critical domain focusing in the U.A.E. It is not in the scope of the study to conduct a cultural or other analysis with the international experience.

In the next section on "Related Works" a brief review of the relevant literature is conducted to point out the main points of interest for the study. The criteria included relevance to the contemporary digital landscape, emphasizing studies that explored parental roles in protecting children from electronic threats. Priority was given to research that addressed the intersection of parenting, internet security, and social media usage. Additionally, studies with a quantitative approach were considered, aligning with the research methodology chosen for this investigation.

2. RELATED WORKS

Davidson's insightful study conducted in Swedish households, where the usage percentage exceeds 90%, reinforces his discovery that a staggering 96% of youngsters across Europe engage with the Internet consistently [1]. Extending beyond Sweden, a significant portion of Turkish youngsters [3] actively utilizes social media in various settings such as at home, in Internet cafes, at school, in libraries, or during visits to friends. Similarly, in England, a substantial majority of children under 18

regularly use social media [4]. These findings underscore the widespread and continuous integration of internet and social media use among youngsters across different European regions, highlighting the need for comprehensive understanding and responsible guidance in their digital interactions.

In line with a distinct survey [10], the majority of parents express awareness of their children's internet activities, yet a mere 12% actively monitor them. The escalating frequency of children's internet use raises concerns among parents, stemming from the worry that their children may be exposed to harmful ideas and influences. Numerous individuals have voiced their discomfort about the tangible risk of their kids visiting websites featuring explicit or violent content, sharing personal information or images, and potentially becoming targets of extortion attempts [3, 11, 12]. This discrepancy between parental awareness and active supervision emphasizes the need for enhanced parental guidance and effective strategies to address the potential risks associated with children's online activities.

Furthermore, an insightful survey conducted by [13] brought to light the prevailing concern among parents regarding their children encountering explicit content, including pornographic photos and videos, during their online activities. A substantial majority of parents expressed apprehension about the potential risks their kids face, ranging from being lured into unsafe situations to experiencing various forms of cyberbullying or psychological harm. Notably, the survey unveiled a disconcerting trend: parents who actively use the Internet appear to be less concerned than their non-internet using counterparts [13]. This contrast in parental concerns underscores the importance of fostering awareness among all parents, regardless of their internet usage, and implementing measures to address the multifaceted risks that children may encounter online.

A noteworthy study [14] brings to light a concerning gap in students' understanding of fundamental online safety issues. The research emphasizes the urgent need for educators and parents to allocate additional time and resources to educate students about cyberbullying and how to protect themselves from potential penetration attempts. Safeguarding students from electronic threats necessitates heightened attention from parents, who should actively monitor their children's online activities. Surveys [8, 9, 11] have shown that

a majority of parents make efforts to supervise their kids' online engagement. However, the predominant method involves physical proximity to observe the websites visited and the downloads made from the internet. Successful execution of these surveillance measures requires a specific set of qualifications and underscores the ongoing importance of enhancing both student and parental awareness in the realm of online safety.

3. METHODOLOGY

The primary objective of this preliminary quantitative research study was to delve into the pivotal role played by parents in safeguarding their children from the myriad threats associated with the unsafe utilization of the Internet and contemporary communication technologies, with a particular focus on social networking applications. The investigation sought to shed light on the extent to which parents are actively involved in guiding and protecting their children within the digital landscape, considering the evolving challenges and risks presented by the dynamic online environment. By exploring the nuances of parental involvement, the study aimed to contribute valuable insights that could inform strategies and interventions to enhance online safety for children.

Dubai, U.A.E., was chosen as the focal point for this research owing to its remarkably diverse population and cultural amalgamation, coupled with its status as an international metropolis. With a resident count exceeding 3 million, equivalent to around 800,000 families, and referencing Checkmarket [15], a sample size of approximately 200 families was deemed appropriate for a survey targeting this population. This sample size was determined with a confidence level set at 95% and a margin of error of approximately 7%. To achieve this, a substantial number of families were invited to participate in the survey, garnering positive responses from 543 of them, who either completed the online survey or engaged in personal interviews (with about 150 opting for the latter). However, only 230 families provided complete survey responses, leading to the exclusion of the remaining participants from the subsequent data analysis.

It is important to note that the selection process, characterized by participants' responses being recorded "as they came," falls under the category of convenience sampling. Consequently, caution must be exercised in drawing broad generalizations from the study, as the methodology employed does not adhere to a specific random sampling procedure. The findings, therefore, offer valuable insights and potential trends within the surveyed population, rather than conclusive generalizations, a consideration further accentuated by the geographical scope of the study.

The survey instrument, in the form of a questionnaire, comprised three sets of questions designed to capture key information. The first set encompassed two questions: one focused on the family's educational level, denoted as "family qualification," and the second on their income. Regarding the family's educational level, respondents were prompted to select from three simplified options: "uneducated," "high school," and "higher education." These categories represented families with no formal education, those with a school certificate beyond the sixth grade, and those possessing some form of certification from a higher education institution, respectively.

In the context of income, families were asked to categorize themselves into three groups: "poor," "middle," and "high." This segmentation aimed to discern potential correlations between the level of parental control and the educational and income status of participating families. Table 1 presents the statistics of the sample, which, according to the researchers, is closely aligned with the actual demographics of the entire population of Dubai. This comprehensive approach allows for a nuanced analysis, exploring the interplay between parental control and socio-economic factors within the surveyed population.

Table 1: Family Qualifications and Family Skills

Family Qualification	Number of Families	Family Skills		
		Poor	Middle	High
Uneducated	10	9	1	0
Schools	90	9	71	10
Higher education	130	30	86	14
Total	230			

The second set of questions within the survey was centered on evaluating the proficiency of parents in using social media. These inquiries delved into various aspects, encompassing whether parents have the ability to create or possess an account on social media platforms, their adeptness in managing passwords effectively, their skills in handling social media connections (friends), and their awareness and vigilance in checking before accepting new files. Furthermore, the survey explored their familiarity with strategies addressing issues such as extortion and electronic espionage pertaining to the use of social media.

To ensure simplicity and clarity in responses, participants were presented with three straightforward options: "Yes," "No," and "I don't know." A positive response of "Yes" signified the parent's capability in managing the specific aspect queried, "No" indicated a lack of expertise in that particular area, and "I don't know" conveyed unfamiliarity with the concept or idea behind the question. This approach facilitated a nuanced assessment of parents' digital literacy and proficiency in navigating the intricacies of social media, providing valuable insights into potential areas that may require attention or education.

The third set of questions in the survey focused on gauging the extent of parents' engagement with their children's use of social media. Specifically, parents were queried about their awareness of their children's social media accounts. If affirmative, further inquiries probed into the nature of their monitoring practices, whether it be a close, physical oversight or a more discreet, remote observation. Additionally, parents were asked if they actively provided guidance to their children, if they had implemented preventive measures against various online threats, and if they possessed an understanding of their children's qualifications to navigate social media safely.

Consistent with the previous set of questions, the response options— "Yes," "No," and "I don't know"— were employed, each carrying distinct implications. "Yes" indicated a positive engagement or awareness of the aspect in question, "No" signified a lack of involvement or understanding, and "I don't know" conveyed uncertainty or unfamiliarity with the concept under consideration. This line of questioning aimed to unravel the dynamics of parental involvement in their children's online activities, shedding light on the various facets of guidance, awareness, and protective measures adopted within the surveyed families.

Prior to the formal execution of the survey and interviews, a panel of specialists and researchers in the field conducted a comprehensive pilot test of the survey instrument. The outcomes of this pilot did not necessitate substantive modifications to the instrument, as the moderators provided their approval with only minor comments related to grammar and language mechanics, rather than the content itself. This meticulous piloting process ensured the reliability and clarity of the survey instrument.

Subsequently, the researchers collaborated with select private schools in Dubai during the academic year 2021-2022, as part of the Student Digital Safety Curriculum project owned by Security Circles Group [16]. The survey was administered with the collaboration and assistance of the school administrations. Parents were facilitated in filling out the survey, and the questionnaire was made accessible through the website of Security Circles Group [17]. This strategic partnership with educational institutions and the utilization of an established curriculum initiative enhanced the reach and efficiency of the survey, ensuring the participation of parents and the collection of valuable insights in alignment with the project's objective

Table 2: Ability to manage Social Media accounts based on Family Qualification (income)

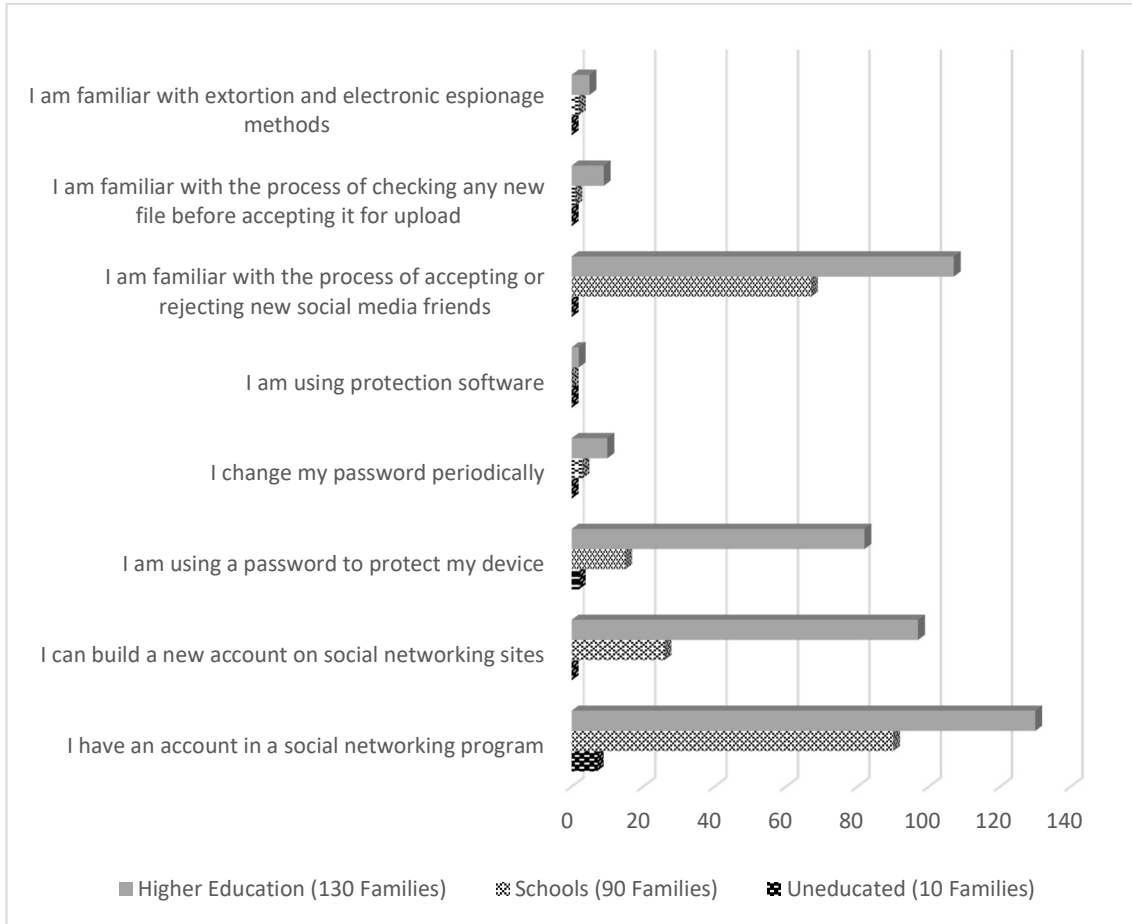| #	Questions	Family Qualification								
		Uneducated (10 families)			Schools (90 families)			Higher education (130 families)		
		# of "Yes"	Mean	Std. Dev.	# of "Yes"	Mean	Std. Dev.	# of "Yes"	Mean	Std. Dev.
1	I have a SN account	7	1.3	0.46	90	1.0	0.00	130	1.0	0.00
2	I can create a new SN account	0	2.8	0.40	26	1.8	0.61	97	1.3	0.44
3	I am using a password	2	1.9	0.54	15	1.9	0.46	82	1.4	0.48
4	I change my password periodically	0	2.7	0.46	3	2.0	0.33	10	1.9	0.27
5	I am using protection software	0	2.8	0.40	0	2.1	0.28	2	2.0	0.12

Figure 1: Ability to manage Social Media accounts based on Family Qualification (income)

4. RESULTS AND DISCUSSION

In the Methodology section, the first set of questions focused on categorizing families, as presented in Table 1. This section will delve into the analysis of the second and third sets of questions. The second set specifically examined the impact of "Family Qualification" (i.e., the educational level of the family) on their ability to manage social media accounts and related tasks. To provide a comprehensive understanding of the statistical data, the mean and standard deviation for each question were calculated.

For clarity and simplicity, a numerical scale was assigned to the responses: a "yes" answer was given a value of 1, a "no" answer received a value of 2, and an "I don't know" response was assigned the value of 3. Consequently, an increase in the mean indicated a perceived lack of parental skills, while a decrease

reflected a higher level of perceived parental skills in managing social media accounts and related tasks. The detailed responses are outlined in Table 2, and Figure 1 visually illustrates these results to facilitate a more intuitive interpretation.

Several noteworthy observations emerge from the analysis. Firstly, as anticipated, nearly all parents from the surveyed families reported having an account on social networks, with only three exceptions where parents identified themselves as uneducated, potentially explaining their limited involvement in social media. Beyond this, the data indicates that non-educated parents, for the most part, exhibit a lower proficiency in essential skills such as opening new accounts, managing passwords, and handling new social media connections. Conversely, families with higher education levels demonstrate improved skills in utilizing the Internet and social media applications, as evidenced by a lower mean of responses compared to uneducated

parents. Additionally, the standard deviation suggests greater consistency in findings among families with higher education.

and extortion threats. Recognizing the existing gaps in skills and understanding, it becomes imperative to develop and implement targeted rehabilitation programs for parents. These programs should be
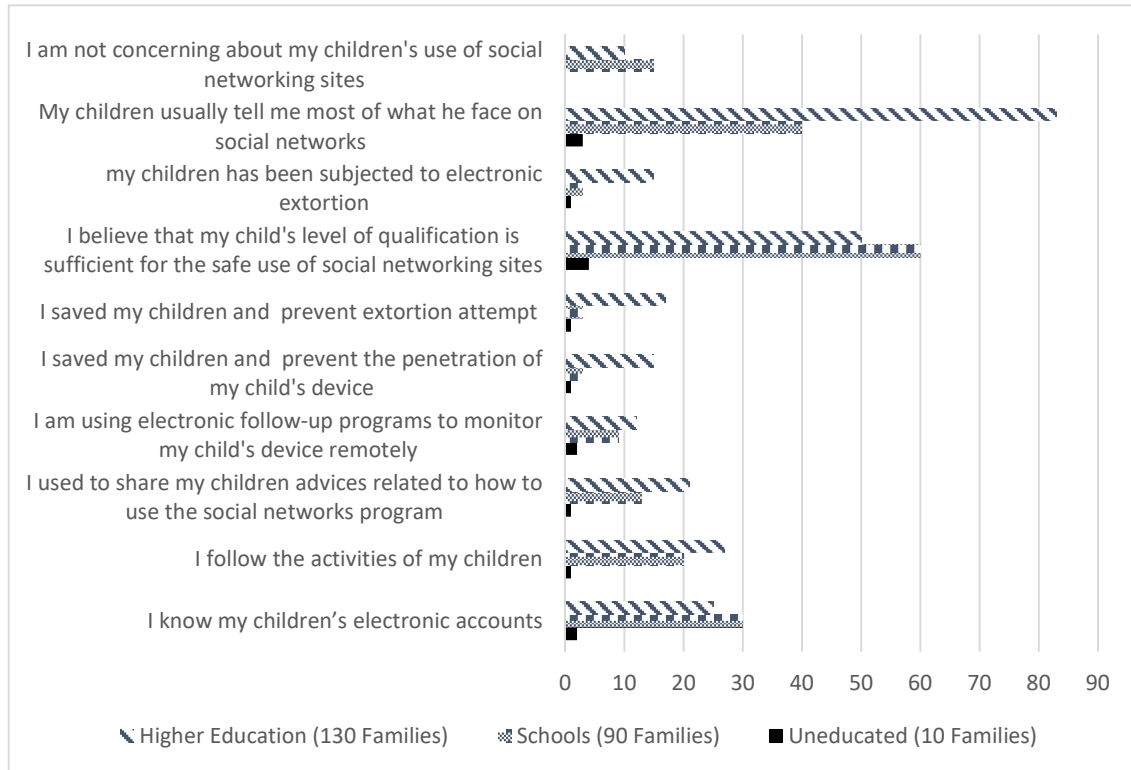

Figure 2: Effort to protect children from online threats based on Family Qualification (income)

However, on a less positive note, these trends seem to be reversed when it comes to more advanced skills required for protection against online threats, encompassing an understanding of methods for extortion and other malpractices, adept password management, and the effective management of multimedia content. Alarmingly, the results indicate a pervasive lack of proficiency in these higher-level skills, irrespective of the parents' educational background. This highlights a critical area for improvement and intervention, emphasizing the need for targeted education and awareness campaigns to enhance parents' capabilities in addressing advanced challenges posed by online threats.

The fundamental interpretation derived from these results underscores the prevalent need for rehabilitation among a significant portion of families in terms of concepts related to safe internet usage and social communication technologies. Evidently, there is a collective requirement for intervention and education to enhance parents' proficiency in safeguarding their children from electronic hacking

designed to address specific areas of concern, offering practical guidance, tools, and knowledge to empower parents in navigating the complexities of the digital landscape and ensuring the online safety of their children. By prioritizing such rehabilitation initiatives, there is a substantial opportunity to bridge the existing gaps and cultivate a more informed and resilient parent community in the realm of digital security.

The third set of questions zeroed in on parents' efficacy in shielding their children from imminent electronic threats. **Error! Reference source not found.** meticulously captures the responses of parents regarding their capabilities in parental monitoring, gauging their proficiency in overseeing their children's internet and social network activities. Figure 2 visually depicts the pertinent data, offering a clear and concise representation of the findings. This set of questions delves into the practical aspects of parental involvement, shedding light on the extent to which parents actively monitor and guide their children's digital interactions, thereby providing valuable insights into the overall landscape of

parental engagement in ensuring online safety for their children.

The analysis of responses reveals a pervasive lack of awareness among families, irrespective of their educational background, regarding their children's internet and social networking usage. Approximately 20% of uneducated families are cognizant of their children's electronic accounts, and this figure is slightly less than 20% for higher educated families. Alarmingly, a mere 10% of uneducated families actively monitor their children's online activities, contrasting with more than 100 higher educated families who engage in such monitoring. Furthermore, the majority of parents, across educational levels, do not proactively advise their children on the precautions necessary to avoid falling victim to hackers. A notable minority of parents acknowledged some awareness of potential penetration attempts targeting their children, with over 90% expressing fear for the safety of their children in the digital realm.

These findings underscore a critical need for increased parental awareness and guidance, irrespective of educational background. It is evident that a substantial portion of parents may benefit from educational programs that not only inform them about their children's online activities but also equip them with the knowledge and tools to actively engage in safeguarding their children from potential digital threats.

Table 3**Error! Reference source not found.** presents a notable observation with a low rate of standard deviation (SD), suggesting a convergence in parents' responses. This convergence indicates a general agreement among most families in their perceptions and experiences. However, a higher rate of the mean indicates a negative direction in responses, signifying those parents, on average, express a perceived inability to protect their children electronically. This implies a significant gap between parents and their children in terms of digital safety measures. Figure 2 visualizes the average standard deviation of all questions along axis 2, offering a comprehensive overview of the variability in responses across different aspects of parental monitoring and protection. The convergence of responses, coupled with a generally elevated mean, underscores the urgency of addressing the perceived challenges parents face in effectively safeguarding their children from electronic threats. These insights serve as a valuable foundation for targeted interventions and educational initiatives aimed at bridging the digital safety gap within families.

Table 3: Effort to protect children from online threats based on Family Qualification (income)

#	Questions	Family Qualification								
		Uneducated (10 families)			Schools (90 families)			Higher education (130 families)		
		# of "Yes"	Mean	Std. Dev.	# of "Yes"	Mean	Std. Dev.	# of "Yes"	Mean	Std. Dev.
1	I know my children's electronic accounts	2	2.3	0.82	30	1.67	0.47	25	2.61	0.39
2	I follow the activities of my children	1	2.3	0.67	20	1.78	0.42	27	1.70	0.46
3	I advise my children how to use the social networks program	1	2.6	0.70	13	1.86	0.35	21	1.77	0.42
4	I am using electronic follow-up programs to monitor my child's device remotely	2	2.4	0.84	9	2.49	0.67	12	2.00	0.52
5	I protect my children and prevent the penetration of my child's device	1	2.6	0.70	3	2.77	0.50	15	1.83	0.37
6	I protect my children and prevent extortion attempt	1	2.5	0.71	3	2.74	0.51	17	1.81	0.39
7	I believe that my child's level of qualification is sufficient for the safe use of social networks	4	2	0.94	60	1.33	0.47	50	1.44	0.50
8	My children have been subjected to electronic extortion	1	2.6	0.70	3	2.39	0.57	15	2.50	0.76
9	My children usually tell me most of what they face on social networks	3	2.3	0.95	40	1.92	0.90	83	1.10	0.37
10	I am not concerned about my children's use of social networks	0	2.4	0.52	15	1.83	0.37	10	1.89	0.31

5. CONCLUSION AND FUTURE WORK

This study critically examines the pivotal role of parents in safeguarding their children from internet hacking and threats, particularly within the realm of social media usage. The findings underscore a noteworthy lack of awareness among parents regarding the imperative need to actively monitor their children's online activities, revealing a significant gap in qualifications, even among those with an educational background, to protect their children effectively in the digital sphere.

To address these concerning revelations, future efforts should prioritize the development of targeted curricula and training initiatives aimed at empowering parents with the knowledge and skills essential for an informed and proactive role in shielding their children from the diverse threats associated with internet and social media interactions.

While this study focused exclusively on Dubai/U.A.E., caution is advised in generalizing the findings universally. A comprehensive and in-depth investigation is recommended, encouraging similar studies by local authorities in other countries to understand the dynamics of parental roles in protecting children from internet threats within diverse socio-cultural contexts. Expanding the research internationally is crucial for enhancing external validity and contributing to a nuanced understanding of the challenges faced by parents worldwide in the digital age. This transformation from a preliminary quantitative study into a comprehensive international exploration has the potential to yield more robust, contextually relevant results.

These educational initiatives should aim to empower parents with the knowledge and skills needed to play an informed and proactive role in shielding their children from the myriad threats and potential damages associated with internet usage and social media interactions. By bridging this knowledge gap and enhancing parental capabilities, it is possible to create a more resilient and digitally literate community, better equipped to navigate the challenges of the online world and ensure the well-being of their children.

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