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Assessment of Temper Tantrums Behavior among Toddler Children

Ahmad Ayed[1], Moath Abu Ejheisheh[2], Ibrahim Aqtam[3,*], Lobna Harazneh[1], Bahaaeddin M. Hammad[1], Faeda A. Eqtait[1], Ahmad Batran[2], Ali Batran[2] , Reham Melhem[2] & Sanaa Alkhatib[2]

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Abstract: Background: Temper tantrums are attention-seeking behaviors manifested through various actions, including shouting, biting, crying, pushing, hitting, throwing objects, and head-banging. **Purpose:** This study aimed to examine the frequency, behaviors, and locations of temper tantrums, as well as parents' strategies to mitigate these tantrums in children aged 12–36 months attending health centers in the southern West Bank of Palestine. **Methods:** A cross-sectional study was conducted involving 282 parents of children aged 12–36 months to assess temper tantrum behaviors and the strategies employed by parents to address them. A multivariate logistic regression analysis was also conducted to identify predictors of tantrum severity. **Results:** The findings indicated that 40.4% of children experienced tantrums on a daily basis, primarily through shouting and crying (94.3% and 92.2%, respectively). The most common triggers for tantrums were unmet needs related to the child's requests for items and activities (95%), followed by resistance to starting, stopping, or changing activities (91.5%). The home was identified as the primary location for tantrums (97.2%), with being left alone as the most frequent context (83%). Parents primarily employed strategies such as speaking soothingly to the child (92.9%) and picking the child up (91.5%). Multivariate logistic regression analysis revealed that father's employment increased the risk of moderate tantrums by 4-fold and severe tantrums by 4.5-fold, while higher paternal education reduced tantrum severity. Additionally, maternal education increased the risk of severe tantrums by 2.5-fold, and children with three or more siblings had a 3-fold increase in the likelihood of moderate tantrums. **Conclusion:** These results highlight significant aspects of temper tantrums, including their frequency, context, behaviors, and triggers. Parental involvement, particularly through soothing communication, is essential for effective intervention and management of tantrums.

Keywords: Temper tantrum, children, toddlers, parents, strategies.

1 Faculty of Nursing, Arab American University, Palestine
[2] Faculty of Allied Medical Sciences, Department of Nursing, Palestine Ahliya University, Bethlehem, Palestine
[3] Department of Nursing, Ibn Sina College for Health Professions, Nablus University for Vocational and Technical Education, Nablus, Palestine
*Corresponding author: ibrahim.aqtam@nu-vte.edu.ps

Introduction

Temper tantrums are defined as inappropriate behaviors stemming from unmet needs in children [1]. These behaviors are often perceived as attention-seeking and can manifest in various forms, including shouting, biting, crying, pushing, hitting, throwing objects, and head-banging [2-3]. Research indicates that the most frequently observed tantrum behaviors are crying (86%), followed by yelling (40%) and whining (13%) [4]. Tantrums typically occur most often in children aged 2 to 3 years, with a noted decline in frequency after the age of five [5-6].

Several factors contribute to the manifestation of temper tantrums. Physiological factors include illness, hunger, and fatigue, while psychological factors may involve the child's experiences of failure. Environmental factors relate to conditions both inside and outside the home, and parental factors encompass communication styles and the level of care provided by parents [7]. Understanding these factors is essential, as it equips parents and healthcare providers with strategies to navigate this challenging developmental phase and enhance children's outcomes [8-9].

Despite their normalcy, temper tantrums can be early indicators of potential developmental and behavioral issues; however, limited knowledge exists regarding their prevalence. Further research is necessary to differentiate between behaviors that are developmentally appropriate and those that may be indicative of underlying concerns [10-11].

Temper tantrums, while part of normal development, can create significant stress for caregivers, including families and healthcare professionals [12]. These episodes are characterized as emotional responses to stimuli, ranging from anger to frustration, primarily observed in children aged 24 to 36 months, although they can also be seen in children as young as 12 months. In some cases, these responses may involve violent or inappropriate behaviors [13].

The severity of tantrums generally decreases as children grow older, but researchers warn that persistent or intense tantrums may signal psychiatric or behavioral concerns [14-15]. Additionally, the duration of tantrums provides crucial insights; longer episodes are often associated with heightened emotional distress and increased difficulty in resolution [16].

Parenting styles can also influence the expression of tantrums. Aggressive behaviors in toddlers have been linked more closely to harsh disciplinary practices than to maternal receptiveness [17-18]. Furthermore, a study conducted across 44 low- and middle-income countries highlighted the positive correlation between maternal education levels and improved child outcomes. Mothers with higher education levels play a crucial role in fostering supportive environments, leading to enhanced developmental results [19].

Children with verbal impairments or autism are at a greater risk for aggressive tantrum behaviors due to their challenges in expressing needs. Additionally, breath-holding episodes may occur during tantrums, affecting approximately 0.1% to 4.6% of children, typically beginning between six and eighteen months and resolving by age five [20]. It is important to consider referral for further evaluation if tantrum behaviors are atypical or suggest more serious concerns, particularly if they persist beyond age five or result in harm to the child or others [13].

Materials and Methods

Design, Sample, and Setting

This study employed a cross-sectional design utilizing a non-probability convenience sampling method to recruit participants. The appropriate sample size was determined using G*Power analysis software (version 3.0.10), assuming an effect size of 0.25, significance level (p) of ≤ 0.05, and a power of 0.95. This analysis indicated a required sample size of 252. To accommodate potential participant dropout, the sample size was increased to 302.

Participants were eligible if they were parents of a child aged between 12 and 36 months, capable of reading and writing in Arabic, able to provide informed consent, and attending one of the primary health centers or general practice clinics in the Hebron and Bethlehem governorates of southern West Bank, Palestine. Participants were recruited through brochures placed in the reception areas of these centers. The brochures provided detailed information about the study and included contact details for the research team. Parents who were interested in participating could directly approach the researchers at the health centers or contact them via the provided information to express their willingness to participate. Parents of children with significant psychological problems were excluded from the study.

Recruitment occurred through brochures placed in the reception areas of the participating health centers, which provided information about the study and included contact details for the researchers. These materials specifically targeted parents who were experiencing childhood behavioral issues or tantrums.

Potential participants contacted the researchers directly. Those who met the inclusion criteria were recruited, and data collection was conducted by two members of the research team. The first researcher approached eligible participants, provided a comprehensive explanation of the study's purpose, and invited them to participate. Participation was entirely voluntary, and participants were informed that they could withdraw from the study at any time without facing any penalties. Written consent was obtained from all participants, who were assured of the confidentiality of their data.

Parents were asked to recall their child's behaviors over the past three months, report instances of tantrum behaviors, and describe their strategies for managing these tantrums. The questionnaire was completed in the selected study settings and collected by the researchers upon completion. After filling out the questionnaire, participants were thanked and informed that they would receive a summary of the study's findings upon its conclusion.

Data Collection Measures and Procedures

The data collection instrument consisted of two parts: socio-demographic information and a 45-item tantrum behavior scale. Socio-demographic characteristics were developed by the researchers based on the study's objectives, including child age, child gender, parental educational levels, employment status, and birth order of the child.

Tantrum behaviors were assessed through parental responses using a scale designed to capture both the children's behaviors during tantrums and the parents' responses. This scale was adapted from the Parents' Experience of Temper Tantrums in Children (PETTC) questionnaire [6] and utilized a 5-point Likert scale ranging from 0 (“Never”) to 4 (“Always”). The instrument is in the public domain and is free to use. The study employed the Arabic version of the adapted questionnaire [21].

Data Analysis

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) software, version 23. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were employed to describe the sample characteristics. Independent t-tests and ANOVA were utilized to compare differences between and within groups, with a significance threshold set at $p < 0.05$.

Results

Demographic characteristics of the participants

A total of 302 questionnaires were distributed to eligible participants who met the inclusion criteria and agreed to take part. Among these, 282 questionnaires were returned, resulting in a response rate of 93.4%.

As illustrated in Table 1, 174 (61.7%) of the surveyed children were aged two years or younger, with 153 (54.3%) being male. Additionally, 134 (47.5%) of the fathers and 124 (44.0%) of the mothers held a bachelor's degree or higher. The employment status indicated that 242 (85.8%) of the fathers were employed, while 118 (41.8%) of the mothers were employed. Moreover, the majority of children, 174 (61.7%), were third-born or later among their siblings.

Table (1): Childs' and parents' demographics (N= 282)

Variable		N (%)
Age	≤ Two years	174(61.7)
	> Two years	108(38.3)
Gender	Male	153(54.3)
	Female	129(45.7)
Fathers' educational level	Primary	60(21.3)
	Secondary	88(31.2)
	Bachelor and above	134(47.5)
Mothers' educational level	Primary	64(22.7)
	Secondary	94(33.3)
	Bachelor and above	124(44.0)
Fathers' employments	Yes	242(85.8)
	No	40(14.2)
Mothers' employment	Yes	118(41.8)
	No	164(58.2)
Sibling order	1st	54(19.1)
	2nd	54(19.1)
	3rd and above	174(61.7)

Description of child tantrums

Out of the total respondents, 114 parents (40.4%) reported that their child experienced daily tantrums, while 146 children (51.8%) were noted to have moderate tantrums. On average, tantrums lasted 7.2 minutes, spanning from 3 to 10 minutes. The predominant tantrum behavior reported by parents was 'screaming or shouting' (Mean = 2.58, SD = 1.25), observed in 94.3% of cases. Following closely was 'crying' (Mean = 2.45, SD = 1.18), documented in 92.2% of instances, as detailed in Table 2.

Table (2): Descriptions of child's tantrum (N = 282)

Description		n (%)	
Frequency of child tantrums in the past three months	Daily	114(40.4)	
	Weekly	90(31.9)	
	Less often	78(27.7)	
Severity of tantrums	Mild	78(27.7)	
	Moderate	146(51.8)	
	Severe	58(20.6)	
Duration of tantrums (Minutes), Mean, Median (IQR)= 7.2,5.0, 3-10			
Tantrum behavior		M(SD)	n(%)
1. Crying		2.45(1.18)	260(92.2)
2. Screaming or shouting		2.58(1.25)	266(94.3)
3. Hitting parents or siblings		1.91(1.35)	224(79.4)
4. Hitting objects		1.87(1.34)	226(80.1)
5. Throwing self on floor		1.84(1.45)	206(73.0)
6. Stomping feet		1.84(1.35)	222(78.7)
7. Deliberately hitting own head against something		1.43(1.35)	186(66.0)
8. Breaking things		1.89(1.36)	222(78.7)
9. Throwing things		2.16(1.29)	244(86.5)
10. Biting		1.87(1.43)	212(75.2)
11. Kicking		1.89(1.29)	224(79.4)

N=Total sample; n=Frequency; %=Percentage; M=Mean; SD=Standard Deviation;
IQR= Inter-Quartile Range.

Reasons of tantrums

As shown in Table 3, ‘‘child's request for item or activity was denied’ was the most common reason reported by parents for tantrums (Mean = 2.53, SD = 1.11; 95.0%), followed by “child was involved in activity and did not want to start/stop/change activity” (Mean=2.24, SD=1.19; 91.5%), and “Child was sick or in pain” (Mean=2.12, SD=1.26; 86.5%).

Table (3): Reasons of child's' tantrums (N=282).

Reasons	M(SD)	n(%)
Child was hungry or tired	1.89(1.23	242(85.8)
Child wanted attention	2.06(1.03)	266(94.3)
Child was sick or in pain	2.12(1.26)	244(86.5)
Child's request for item or activity (e.g., snack) was denied	2.53(1.11	268(95.0)
Child was involved in activity and did not want to start/stop/change activity (e.g., to go get dressed)	2.24(1.19)	258(91.5)
I don't know what started it	1.93(1.16)	248(87.9)

M= Mean; SD= Standard Deviation; %: Percentage.

Locations, context, and parents' strategies

Table 4 shows that the most frequent location in which children threw tantrums were “At home” (Mean = 2.48, SD = 1.08; 97.2%), and “When visiting someone else's home” (Mean = 2.03, SD = 1.19; 87.9%). The most common context for a tantrum was “When left alone' (Mean = 2.21, SD = 1.40; 83.0%), followed by “When supposed to go to bed” (Mean= 2.12, SD = 1.23; 88.7%). ‘Speaking soothingly to the child’ (Mean=2.62, SD=1.07; 92.9%) and ‘Picking the child up and holding him/her’ (Mean= 2.60, SD = 1.25; 91.5%) were the main strategies used to manage tantrums.

Table (4): Sites, context, and parents coping strategies to child's tantrum behaviors

Variable	M(SD)	n(%)
Locations of child's Tantrums (N = 282)		
At home	2.48(1.08)	274(97.2)
In public places	1.89(1.14)	250(88.7)
In the car	1.78(1.15)	240(85.1)
When visiting someone else's home	2.03(1.19)	248(87.9)
Context of Child's Tantrum behaviors (N = 282)		
When dressing	1.97(1.17)	246(87.2)
At meals	2.04(1.21)	246(87.2)
When getting washed	1.97(1.28)	244(86.5)
When supposed to go to bed	2.12(1.23)	250(88.7)
When left alone	2.21(1.40)	234(83.0)
When in the company of other children	1.98(1.29)	242(85.8)
When routines changed	1.98(1.20)	242(85.8)
In your own home when having guests	1.90(1.21)	242(85.8)
When troubled by strong sounds or lights	1.99(1.18)	250(88.7)
In new unfamiliar situations	1.89 (1.19)	244(86.5)
Parent's strategies to halt child's Tantrums (N = 282)		
Speaking soothingly to the child	2.62(1.07)	262(92.9)

	Picking the child up and holding him/her	2.60 (1.25)	258(91.5)
	Commanding the child to stop	2.41(1.23)	258(91.5)
	Stating a consequence (e.g., timeout	2.10(1.24)	242(85.8)
	Spanking the child	1.63(1.40)	200(70.9)
	Ignoring the behavior	1.92(1.27)	234(83.0)
	Giving the child what he/she wanted	2.01(1.04)	256(90.8)
	Offering the child a reward if he/she would behave	2.45(1.17)	260(92.2)
	Turning your back on the child and walking away	1.91(1.22)	240(85.1)
	Finding a way to distract that child's attention away from whatever was upsetting him/her	2.42(1.11)	268(95.0)
	Helped the child to talk about the causes for his/her anger	2.57(1.14)	272(96.5)

Group differences

The analysis found no differences by gender in relation to the following aspects of reasons, locations, contexts, and parent's strategies to stop tantrums according to child's gender (P> 0.05), as seen in Table 5.

Table (5): Differences between aspects of tantrum behavior and the toddler gender

Variable	Gender		t test	p. value
	Male	Female		
	M(SD)	M(SD)		
Tantrum behavior	2.04(0.85)	1.89(0.91)	1.489	0.138
Reasons	2.18(0.73)	2.07(0.74)	1.242	0.215
Locations of child's Tantrums	2.09(0.70)	1.99(0.77)	1.096	0.274
Context of Child's Tantrum behaviors	2.08(0.73)	1.92(0.80)	1.748	0.082
Parent's strategies to halt child's Tantrums	2.11(0.52)	2.07(0.54)	0.752	0.453

An analysis of variance (ANOVA) was conducted to compare tantrum behavior across different levels of severity, revealing statistically significant differences in various aspects: reason for tantrums, Locations of child's Tantrums, Context of Child's Tantrum behaviors, and parents' strategies ($F(2)=15.323$, $p<0.001$; $F(2)=26.467$, $p<0.001$; $F(2)=26.216$, $p<0.001$; and $F(2)=13.500$, $p<0.001$), respectively, as seen in (Table 6).

Table (6): Differences between aspects of tantrum behavior and the severity of tantrums

Variable	Severity of tantrums			ANOVA	p. value
	Mild	Moderate	Severe		
	M(SD)	M(SD)	M(SD)		
Reasons	1.78(0.62)	2.20(0.72)	2.42(0.74)	15.323	.000
Locations of child's Tantrums	1.65(0.59)	2.08(0.73)	2.49(0.64)	26.467	.000
Context of Child's Tantrum behaviors	1.56(0.70)	2.08(0.71)	2.41(0.70)	26.216	.000
Parent's strategies to halt child's Tantrums	1.91(0.50)	2.08(0.54)	2.37(0.41)	13.500	.000

A post hoc test utilizing the Tukey method was employed to assess pairwise mean differences. This test revealed significant disparities in all aspects of tantrum behavior across severity levels, including reasons for tantrums, locations of tantrums, context of tantrums, and parental strategies. Specifically, the severe level showed favorable over the moderate and mild levels, while the moderate level was favored over the mild level ($P < 0.05$). However, there were no significant differences observed between moderate and severe tantrum levels concerning the reasons for the tantrums ($P> 0.05$).

Multivariate logistic regression analysis identified father's employment as the strongest independent predictors of severity of temper tantrum. The risk of fathers' employment was increased moderate temper tantrum nearly 4-fold while it increased the risk 4.5 -fold of severe temper tantrum. Also, fathers' bachelor and above educational level increased the risk 0.5 –fold of moderate temper tantrum and less than 0.5 –fold of severe temper tantrum. Additionally, mothers' bachelor and above increased risk 2.5-fold of severe temper tantrum. Furthermore, 3rd and above sibling order increase risk 3-folds moderate temper tantrum (Table 7)

Table (7): Estimated effects of selected predictors using Multivariate logistic regression model.

Variables	Categories	Moderate tantrum OR (p-value)	95% Confidence interval		Severe tantrum OR (p-value)	95% Confidence interval	
			Lower bound	Upper bound		Lower bound	Upper bound
Age	≤ Two years(a)						
	> Two years	1.28(0.454)	0.673	2.423	1.06(0.887)	0.483	2.318
Gender	Female(a)						
	Male	0.69(0.211)	.381	1.238	.70(0.336)	.337	1.449
Fathers' employments	No (a)						
	Yes	3.76(0.026)*	1.176	12.031	4.48(0.021)*	1.254	15.975
Mothers' employments	No(a)						
	Yes	1.65(0.132)	.860	3.152	1.24(0.604)	.554	2.760
Fathers' educational level	Primary (a)						
	Secondary	1.41(0.459)	.570	3.474	1.30 (0.622)	.458	3.690
	Bachelor	.48(0.034)*	.239	.946	0.35(0.022)*	.144	.861

	and above						
Mothers' educational level	Primary						
	Secondary	2.03 (0.108)	.573	2.907	1.89 (0.249)	.640	5.607
	Bachelor and above	1.69 (0.160)	1.249	6.088	2.61(0.036)*	1.066	6.410
Sibling order	1st(ª)						
	2nd	1.29 (0.539)	.573	2.907	1.83 (0.214)	.706	4.733
	3rd and above	2.76 (0.012)*	1.249	6.088	.98 (0.972)	.318	3.017

a;- Reference category; OR- Odds Ratio *p value < 0.05.

Discussion

The findings of this study revealed that 40.4% of the children reported experiencing tantrums on a daily basis, while 31.9% indicated weekly occurrences. This observation is consistent with international research, including the study by Akker et al., which identified a higher prevalence of tantrums among children aged 3 to 5 years; however, our investigation specifically targeted a younger cohort of children aged 12 to 36 months [2]. Additionally, our results indicated that 51.8% of the children exhibited moderate tantrums, corroborating Astuti's findings of comparable prevalence rates of moderate tantrum severity among Indonesian children [22]. In contrast, our data diverged from that of Eisbach et al., which reported that 60% of participants displayed low severity of tantrums [23]. This discrepancy may be attributed to variations in the demographic characteristics of the study populations, cultural influences, or differences in parental perceptions and the reporting of tantrum behaviors.

In terms of behavior, screaming or shouting was reported by 94.3% of parents as the predominant tantrum behavior, which mirrors findings from Salameh et al, where 99.1% of Jordanian parents reported similar behaviors [21]. This high prevalence of vocal outbursts across studies may reflect common developmental milestones in toddlers, where language skills are emerging but emotional regulation is still developing. Moreover, the most frequent trigger for tantrums in our study, denial of the child's request for items or activities (95%), is consistent with Putri et al., who highlighted that unmet demands were a primary tantrum trigger in early childhood across different cultural settings, including Indonesia [24]. This suggests that certain tantrum triggers, like unmet requests, may be universal across diverse socio-cultural contexts.

Regarding tantrum context and location, our study found that 97.2% of tantrums occurred at home, which is similar to Broder, who reported that 100% of tantrums took place in the home environment [25]. This consistency across studies suggests that the home may provide a familiar setting where children feel secure enough to express strong emotions. Moreover, being left alone was the most common tantrum context in our study (83%), reinforcing the theory that toddlers may struggle with separation anxiety or feelings of abandonment, a pattern also observed in studies conducted in Bahrain [26].

Parental strategies in dealing with tantrums, such as speaking soothingly (92.9%) and picking the child up (91.5%), align with findings from Chen et al, who noted similar strategies in China [27]. These strategies highlight the global importance of nurturing responses in managing early childhood behavioral challenges. Such techniques appear to reduce tantrum intensity and improve emotional regulation, demonstrating the universal relevance of parental calmness and soothing in mitigating tantrum behaviors.

In terms of predictors of tantrum severity, our multivariate logistic regression analysis revealed that father's employment was the strongest independent predictor of tantrum severity, increasing the risk of moderate tantrums by 4-fold and severe tantrums by 4.5-fold. This finding is consistent with studies from low- and middle-income countries, where paternal employment has been linked to stress and less involvement in caregiving [18]. This may explain why children in households with employed fathers exhibit more severe tantrum behaviors, as paternal presence or engagement may mitigate emotional outbursts. Additionally, higher paternal education was associated with a reduced risk of both moderate and severe tantrums, with the odds decreasing by 0.5-fold for moderate tantrums and less than 0.5-fold for severe tantrums. In contrast, higher maternal education increased the risk of severe tantrums by 2.5-fold. One possible explanation is that in contexts where mothers with higher education are employed, children may experience reduced maternal availability, potentially leading to heightened emotional responses like tantrums. This aligns with research by Leung et al, which suggested that children in dual-working households may experience more behavioral issues due to the reduced time spent with parents [20].

The influence of sibling order was also notable, with children who were third-born or later exhibiting a 3-fold increase in the likelihood of moderate tantrums. This observation is in line with studies suggesting that children born into larger families may experience more competition for attention, potentially exacerbating tantrum behaviors [8].

The significance of our findings lies in the identification of key sociodemographic factors that influence the severity of temper tantrums in young children. The strong association between paternal employment and tantrum severity highlights the need for interventions that address the role of fathers in early childhood care, especially in cultures where paternal involvement may be limited due to work commitments. Additionally, the contrasting effects of parental education on tantrum severity suggest that interventions should be tailored to address the unique stressors faced by educated working parents, particularly mothers, to better support both child emotional regulation and work-life balance.

Furthermore, our results emphasize the universal nature of tantrum triggers and parental strategies, suggesting that international parenting programs may benefit from incorporating strategies such as soothing communication and nurturing responses, which appear effective across different cultural settings. These universal strategies could be incorporated into parenting interventions and support programs aimed at reducing tantrum severity and improving child emotional regulation.

This study enriches the global understanding of tantrum behaviors by drawing comparisons with international research, while also highlighting culturally specific influences in Palestine. These findings are valuable for informing future research and intervention programs aimed at supporting parents in managing tantrum behaviors effectively, promoting healthier developmental outcomes in children. The identification of sociodemographic factors, particularly paternal employment and education, as significant predictors of tantrum severity underscores the need for tailored interventions that address the unique challenges faced by families in both local and international contexts.

This study represents the inaugural research endeavor in Palestine focusing on temper tantrums among toddlers. A comprehensive evaluation of tantrum behaviors in this age group was facilitated through meticulous assessment using a well-structured questionnaire covering various aspects of tantrum behaviors. However, the use of a cross-sectional design, providing only a snapshot of parental knowledge at a specific moment, poses limitations in establishing causal relationships between variables. Additionally, reliance on self-reported data from parents may introduce social desirability bias or lead to underestimation of knowledge levels

Recommendations

This study furnishes health care professionals and parents with vital insights into temper tantrums, encompassing their frequency, behaviors, locations, and contexts. Additionally, it elucidates the strategies employed by parents to mitigate tantrum behaviors among toddlers. An imperative recommendation is the implementation of parental training programs within communities to enhance parental competence in managing these challenging behaviors. Collaborative efforts involving diverse healthcare professionals are essential to optimize outcomes. Contextual factors influencing parental responses to tantrums warrant investigation, as does exploring the relationship between various parenting styles and tantrum occurrences. Furthermore, comparative studies conducted in diverse settings could illuminate disparities in tantrum management and identify the most efficacious approaches to improving child outcomes. Future research endeavors should encompass broader age groups to elucidate developmental changes over time.

Conclusions

The results shed the light on significant aspects of temper tantrums including its frequency, severity, context, location, behaviors, and reasons. The family participation mainly parents in the management of the tantrums is found to be essential in our study through speaking soothingly to the child in order to maintain better interventions and control these tantrums.

Abbreviations

N, Number;
SD, Standard Deviation;
M, Mean;
IQR, Interquartile Range;
SPSS, Statistical Package for the Social Sciences.

Author Contribution Statement

AA, MAE, and IA conceptualized the study. AA, MAE, IA, LH, BMH, and FAE developed the methodology, while IA, RM, and SA handled the software. LH, BMH, ABa, and ABo validated the results. Formal analysis was conducted by IA, RM, and SA. AA, MAE, LH, and FAE carried out the investigation, and resources were provided by MAE, ABa, and ABo. IA, RM, and SA curated the data. IA, MAE, and LH wrote the original draft, with AA, MAE, LH, BMH, and FAE contributing to the review and editing. RM and SA created the visualizations. AA, MAE, and IA supervised the project, while AA, MAE, and LH managed project administration.

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Data Availability

Adequate and clear descriptions of the materials and tools used in this study are provided in the Materials and Methods section of the manuscript. Additionally, the data obtained is clearly justified and supported by the tables included in the manuscript.

Declarations

Ethics approval and consent to participate

Ethical approval for this study was granted by Palestine Ahliya University (Project Number: CAMS/BSN/3/1225). Written informed consent was obtained from all participants prior to their inclusion in the study.

Confidentiality

We confirm that the data collected was exclusively used for research purposes. All information provided by the participants was kept confidential and was used solely for this study. The data was securely stored, with access restricted to the research team only. Physical copies were kept in a locked cabinet, ensuring that no unauthorized individuals could access the information.

Consent for Publication

Not applicable.

Conflict of Interest

Researchers declare no conflict of interest with any organization regarding the materials discussed in this paper.

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