JOURNAL ARTICLE GRADING RUBRIC (Safety and Nutrition)

Correct Format. Stapled or secured in a binder. All paraphrases or quotes must be cited. Spelling and grammar must be correct. Journal articles must be presented to the class. The student is allowed ONE note card as a prompt during presentation. Student must be appropriately dressed. To receive credit for the assignment, the journal article must be attached to the paper submitted in class and the Summary and Evaluation sections must also be submitted on line through Blackboard.

Item	0	½ Credit	Full Credit	Score
Cover Sheet (1/2 point)	Items missing or incorrect format.		Contains all items required, in correct format.	
Summary and Evaluation format (1 point)	One is ½ or less page, contains pervasive spelling/grammatical errors, or uses incorrect margins and spacing.	One is ¾ page summary, contains 4-5 grammatical/spelling error, or has incorrect margins or spacing.	Each is 1 full page. Each contains 2 spelling/grammatical errors or less. Correct margins and spacing are used.	
Summary and Evaluation (1 ½ points)	Unclear, vague description of article and evaluation of article, does not answer any of the questions posed.	Somewhat unclear in explanation and evaluation of article, only answers 1-2 of the questions posed.	Written in correct & narrative format. Clear explanation and evaluation of the important elements of the article. Answers at least 4 of the questions posed. 2-4 paragraphs.	
Plagiarism (1 point)	Plagiarized with no attempt to quote and cite material from the article.	Some attempt at proper quoting and citing but not all quotations are properly noted.	Proper use of quotations with corresponding page numbers cited.	
Three questions (1/2 point)	0 well written Divergent questions Pervasive spelling / grammatical errors.	2 Well written Divergent questions. Closed or yes/no questions do not count. 2-3 errors in spelling/grammar	*3 Divergent questions* which allow for any number of correct answers. They encourage broad responses, require creative thinking, and tend to engage learners. Well written with less than 2 spelling/grammatical errors	
Presentation (1/2 point)	Did not present or gave poor presentation. Inappropriately dressed.	One of the following was evident: not well prepared, used more than one note card, did not speak clearly and audibly, read parts of presentation, not appropriately dressed.	Well prepared for presentation. Used one note card or less. Spoke clearly and audibly. Did not read presentation. Appropriately dressed.	

SCORE **/5**

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An Exploratory Study of the Knowledge of Personal Safety Skills Among Children with Developmental Disabilities and Their Parents

Hannah L. Miller*, Kathryn M. Pavlik*, Min Ah Kim† and Karen C. Rogers‡

**USC University Center for Excellence in Developmental Disabilities, Children's Hospital Los Angeles, Los Angeles, CA, USA; †Department of Social Welfare, Myongji University, Seoul, Korea; ‡University of Southern California Keck School of Medicine, Los Angeles, CA, USA*

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Background This study assessed the knowledge of personal safety skills among children with developmental disabilities and their parents' perceptions of children's knowledge.
Method This exploratory study examined the mental health records of 37 children with developmental disabilities referred for an abuse risk reduction group in a community mental health setting. Qualitative analysis of children's responses to questions about personal safety skills (knowledge related to physical development and personal safety, an appropriate and inappropriate touch and safety skills to respond to an inappropriate touch) indicated participants' varied and inconsistent levels of knowledge.
Results Consistent with the literature, the results indicate risk factors for sexual abuse among children with developmental disabilities, including children's difficulty distinguishing between an appropriate and inappropriate touch and the lack of knowledge regarding appropriate venues for disclosing an inappropriate touch. Among parents, a lack of certainty regarding their children's knowledge and the ability to keep themselves safe was identified.
Conclusion Results support the need for education about personal safety for children with developmental disabilities and their families.

Keywords: abuse prevention, child abuse, developmental disability, sexual abuse

Background

Children with disabilities are at an increased risk for multiple types of maltreatment in comparison with their typically developing peers, including physical violence, sexual abuse and peer victimization (Turner *et al.* 2011; Jones *et al.* 2012). Children with developmental disabilities may be particularly vulnerable to sexual abuse (Mahoney & Poling 2011; McEachern 2012) due to factors such as social skills deficits, limited judgement regarding appropriate interpersonal boundaries, a lack of knowledge regarding sexuality and sexual behaviour and a lack of strategies to defend themselves against abuse (Lumley & Miltenberger 1997; Mazzucchelli 2001; Sevlever *et al.* 2013).

Child sexual abuse occurs at alarmingly high rates in the general population with as many as 17% of girls and 8% of boys experiencing some form of sexual abuse prior to turning 18 (Pereda *et al.* 2009), and these odds appear to dramatically increase among individuals with developmental disabilities. While reports of prevalence vary, it is evident that children with disabilities experience significantly heightened risk of sexual abuse, especially among individuals with severe disabilities (Martin *et al.* 2006; Hershkowitz *et al.* 2007) and/or intellectual disabilities (Wissink *et al.* 2015). In addition to increased prevalence, there appears to be risk for greater severity of abuse, as children with developmental disabilities have been found to be more likely to experience sexual abuse that involves penetration, physical force or violence and/or repeated occurrences (Hershkowitz *et al.* 2007; Akbas *et al.* 2009). Furthermore, individuals with intellectual disabilities are also more likely to engage in sexually abusive or

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inappropriate behaviour, most commonly towards others with developmental disabilities (Martinello 2015; Wissink *et al.* 2015).

Using Bronfenbrenner's (1976, 1977) ecological systems framework, the vulnerability of children with developmental disabilities to maltreatment has been linked to multiple factors at different systemic levels including those at the societal, community, family and individual level (Algood *et al.* 2011). For example, societal perceptions of individuals with developmental disabilities may serve to increase the risk for sexual abuse because children may be perceived as vulnerable populations who are unlikely or unable to disclose abuse and less likely to be considered as credible informants (Kim 2010). This may lead to children being targeted by perpetrators who believe they will not be able to defend themselves, will not disclose the abuse or will not be believed if they do disclose.

At the community and family level, exposure to different service providers and caretakers, including dependence on others for intimate care, may contribute to offenders' access to children with developmental disabilities (Jones *et al.* 2012). To add to this vulnerability, children with developmental disabilities are often taught to be compliant with all caregivers' requests contributing to what Mazzucchelli (2001) referred to as a 'culture of compliance' (p. 116) within this population. In fact, extremely high rates of sexual abuse by service providers and family members have been reported within this population (McCormack *et al.* 2005; Akbas *et al.* 2009; Mahoney & Poling 2011).

At the individual level, communication delays can limit children's ability to refuse unwanted touch and effectively disclose abuse when it occurs (Mazzucchelli 2001; Martinello 2015). Additionally, an individual's adaptive abilities and dependence on others for support with self-care tasks (e.g. toiletting, dressing) may contribute to confusion about appropriate boundaries and rights to privacy (Martinello 2015).

Most importantly, a lack of sexual education and knowledge of safety skills has been proposed as a major factor contributing to the markedly increased risk of victimization among individuals with developmental disabilities (Mazzucchelli 2001; Swango-Wilson 2008; Akbas *et al.* 2009; Wissink *et al.* 2015). Individuals with developmental disabilities experience sexual feelings and urges, seek out sexual and romantic relationships in adolescence and adulthood and have a right to sexual health, thus making knowledge about sexuality and safe practices important for youth with developmental disabilities (Richards *et al.* 2006; Löfgren-Mårtenson 2012; Schaafsma *et al.* 2015).

Education and Risk Reduction

Sex education for youth with developmental disabilities that promotes knowledge and skills may be crucial in reducing not only victimization, but also perpetration of inappropriate or abusive sexual behaviours (Martinello 2015). While the lack of knowledge is a risk factor that is amenable to intervention at different levels, the actual knowledge base of children with developmental disabilities on topics related to sex education and personal safety is an area in the literature that remains speculative as little has been definitively measured. The knowledge base of other populations (e.g. typically developing pre-schoolers, transitional age youth with intellectual disabilities) has been empirically studied (Kenny *et al.* 2012; Löfgren-Mårtenson 2012), but has not been directly explored among children with developmental disabilities.

What is known is that children with developmental disabilities can learn to be assertive in protecting their own bodies and to report sexual abuse effectively (Murphy & Elias 2006). The American Academy of Pediatrics (2001) recommends that guidance on sex education, sexual abuse prevention and parent education on these topics be incorporated into the clinical care of children with developmental disabilities. It is recommended that parents begin teaching risk reduction skills when children are young and that these skills are practised repeatedly to promote maintenance and generalization regardless of a developmental disability diagnosis (Kenny *et al.* 2013).

At a systemic level, it is important to develop risk reduction programmes which may reduce the prevalence and severity of sexual abuse in this population by strengthening protective factors against sexual abuse (Kim 2010; McEachern 2012; Kenny *et al.* 2013; Schaafsma *et al.* 2015). A substantial body of literature speaks to the need for and the potential effectiveness of sexual abuse prevention programmes for individuals with developmental disabilities (Muccigrosso 1991; Whitehouse & McCabe 1997; Caspar & Glidden 2001; Hayashi *et al.* 2011; Schaafsma *et al.* 2015; Wissink *et al.* 2015). There is evidence that sex education effectively increases knowledge and safety awareness among persons with developmental disabilities (Gougeon 2009; Schaafsma *et al.* 2015).

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inappropriate behaviour, most commonly towards others with developmental disabilities (Martinello 2015; Wissink *et al.* 2015).

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targeted towards adults while opportunities to provide sex education for children with developmental disabilities are often overlooked or avoided by well-intentioned caregivers and service providers (Lafferty *et al.* 2012). Isler *et al.* (2009) reported that a majority of parents of children with intellectual disabilities (75%) had not received any professional education on sexual development and approximately one-third never talked about sexuality with their children. Gurol *et al.* (2014) conducted qualitative interviews with 9 mothers who had at least one child with an intellectual disability (aged 7–18 years) and found that none of the mothers had provided sex education for their children. In fact, some parents believe that providing sex education might actually cause harm by introducing information that encourages unwanted sexual behaviour (Rohleder 2010). Although the lack of knowledge has consistently been identified as a major risk factor for abuse, prior research has not clearly explored the knowledge of children with developmental disabilities on topics related to sexuality, sexual development and personal safety skills.

Given the significance of children's knowledge about personal safety skills and the lack of previous studies investigating this topic, this exploratory study aimed to provide foundational evidence for developing a risk reduction programme for children with developmental disabilities. Using preliminary data from qualitative interviews with children complemented by quantitative data from their parents, this study explored the knowledge of sexuality, sexual development and personal safety among a sample of children and adolescents with developmental disabilities referred for an abuse risk reduction programme in a community mental health agency. Although exploratory in nature, this study contributes to the literature on the knowledge of personal safety skills among children with developmental disabilities.

Method

Study site

This exploratory study was conducted with a population of children and their families referred for an abuse risk reduction intervention at a community mental health clinic within a large, urban children's hospital located in Southern California. The clinic provides assessment and psychotherapy to children with and without developmental disabilities. Psychotherapists and physicians within the clinic referred the families to a risk reduction programme that provides education and personal safety skill training to children and adolescents with developmental disabilities. Referrals to the programme were based on perceived clinical needs of children, and a child's prior exposure of abuse was not necessary for referral.

Participants

Participants in this study were children diagnosed with developmental disabilities and their parents or guardians. All families included in this study met the following inclusion criteria: their children: (i) were between 7 and 19 years of age at the time of study, (ii) were diagnosed with a developmental disability, and (iii) had a parent participating in the treatment. Developmental disability diagnoses included pervasive developmental disorders (e.g. autistic disorder, pervasive developmental disorder, not otherwise specified), intellectual disabilities, learning disorders, communication disorders and biological or genetic conditions that cause developmental delay (American Psychiatric Association 2013). Parents were required to demonstrate literacy in either English or Spanish in order to accurately complete a written measure at the sixth-grade reading level. The children enrolled in the study were also required to demonstrate sufficient language skills to comprehend and meaningfully respond to interview questions.

Participating children's demographic and diagnosis information is presented in Table 1. Twenty boys (54.1%) and 17 girls (45.9%) with developmental disabilities and their parents participated in our study. The children's mean age was 11.13 years (SD = 2.67). Although some African American (n = 3, 8.1%) and Caucasian (n = 3, 8.1%) children participated in the study, participants were predominantly Latino (n = 31, 83.8%), which is consistent with the clinical population served in our urban community mental health clinic setting. More than half of children (n = 21, 56.8%) participated with parents who identified Spanish as their preferred language, and 43.2% (n = 16) were accompanied by parents who identified English as their preferred language. The majority of participating children (n = 26, 70.2%) had one developmental disability diagnosis, while 11 (29.7%) had multiple comorbid developmental disability diagnoses. All the participants had at least one type of psychiatric diagnosis, which is requisite for participation in mental health services at the clinic. Behaviour disorders (oppositional defiant disorder, disruptive behaviour disorder, not otherwise specified) were the most

Table 1 Demographic and diagnostic information of participants ($N = 37$)

Variables	*n (%) or M ± SD*
Age (M ± SD), years	11.13 ± 2.67
Gender	
Boys	20 (54.1)
Girls	17 (45.9)
Ethnicity	
Latino	31 (83.7)
African American	3 (8.1)
Caucasian	3 (8.1)
Language preference of parent	
Spanish	21 (56.8)
English	16 (43.2)
Disability diagnosis type	
Pervasive developmental disorder	18 (60.0)
Intellectual disabilities	14 (46.7)
Learning disorders	3 (10.0)
Communication disorders	3 (10.0)
Psychiatric diagnosis	
Behaviour disorders	13 (43.3)
Anxiety disorders	8 (26.7)
Attention deficit/hyperactivity disorder	6 (20.0)
Mood disorders	5 (16.7)
Adjustment disorders	5 (16.7)
Psychotic disorders	1 (3.3)

frequently reported comorbid psychiatric diagnoses among the participants ($n = 13$, 43.3%), followed by anxiety disorders ($n = 8$, 26.7%), attention deficit/hyperactivity disorder ($n = 6$, 20.0%) and others such as mood disorders ($n = 5$, 16.7%), adjustment disorders ($n = 5$, 16.7%) and psychotic disorders ($n = 1$, 3.3%).

Procedures

Structured interviews were conducted with 37 children with developmental disabilities in a mental health clinic to assess participants' knowledge of personal body safety prior to their participation in a risk reduction group. The purpose of the interview was to determine the child's need for the educational and safety skills training content of the group intervention. Interviews were conducted with children referred to the programme for groups offered twice per year over a period of 4 years. Graduate-level mental health clinicians conducted individual interviews with participating children. Prior to the administration of interviews, clinicians attended a didactic training and were provided with interview scripts to ensure a consistency in the administration of interview questions. In accordance with best practice recommendations for interviewing children with intellectual and other developmental disabilities, interviews were structured to facilitate rapport building at the beginning of the interview (e.g. beginning with questions about interests and friendships), involved multiple open-ended prompts and avoided reliance on advanced communication skills that may be limiting for some children with disabilities (Agnew *et al.* 2006; Cederborg & Lamb 2008; Bowles & Sharman 2014). For each child who participated in the interview, a parent completed a questionnaire assessing perceptions of the child's knowledge regarding puberty and physical development, and abilities related to personal safety. Data collection and analysis were conducted in concord with standards approved by the institutional review board of Children's Hospital Los Angeles (IRB: CCI-14-00021).

Measures

Measures utilized in this study included a child interview and a parent questionnaire. These measures were developed by a team of clinical psychologists and psychotherapists who specialize in mental health assessment and treatment of children with histories of abuse and trauma. The measures were created to highlight the competencies and clinical components addressed in the group intervention and were pilot-tested for use with children with developmental disabilities, and their parents, to increase the utility of the measures for programme development purposes. Children and parents who participated in pilot testing were not part of the analysis in this study.

Child interview

The child interview questions were developed from therapeutic materials designed to provide education to children of varying ages and developmental abilities on topics related to child abuse and abuse prevention (Deblinger *et al.* 2006; Bastida 2007). Questions were similar to those included in previous studies that have measured typically developing children's knowledge about their bodies and personal safety skills (Wurtele *et al.* 1992a, 1992b; Wurtele *et al.* 1998) as no existing measures have been validated to test these areas of knowledge in children with developmental disabilities.

The child interview included six short-answer questions that assessed the following knowledge related to personal safety skills. First, participants'

knowledge regarding private body parts and physical change associated with puberty was assessed by two items following a similar open-ended format to those used in previous studies (Wurtele *et al.* 1992a, 1992b; Wurtele 1993). Second, participants' ability to recognize an appropriate touch and inappropriate touch was assessed by using the items similar to the 'What If' Situations Test (WIST; Wurtele *et al.* 1998). Children were presented with two vignettes and asked to identify whether the vignettes described an 'okay touch' or a 'not okay touch'. The vignettes used in our study were phrased in more brief and simplistic terms than those utilized in other measures that have assessed typically developing children's knowledge on this topic (Wurtele *et al.* 1992a,b; Wurtele *et al.* 1998). For example, children were asked, 'Billy got hurt and went to the doctor and the doctor gave him a shot. Is this an okay touch or a not okay touch?' Then, participants were prompted to explain how they would respond to unsafe situations. Finally, they were asked to identify trustworthy adults who would be able to help them, by asking them to name individuals 'who can help you if you need help'.

Parent questionnaire

The parent questionnaire included five items that examined parent perceptions of their child's ability to understand, identify and effectively respond to unsafe situations. Questions were based on areas of knowledge identified to be important for children's personal safety (Wurtele *et al.* 1998; Bastida 2007) and written to reflect knowledge domains covered by the curriculum of the risk reduction intervention. Parents were asked to rate how often their child was able to demonstrate knowledge associated with sexual development and to utilize personal safety skills. For example, parents were asked to gauge how often their child was able to 'understand the difference between an appropriate and inappropriate touching'. Questions were written at the sixth-grade reading level or lower in order to ensure comprehension and accurate responding. The parent questionnaire was provided in English and Spanish based on respondent preference. Each item was scored using 5-point Likert scale, ranging from 1 (never) to 5 (always).

Medical records

The medical records of participants that were collected during the course of participants' services at the clinic provided demographic (age, ethnicity and parent language preference), mental health (developmental disability diagnoses and co-occurring mental health diagnoses) and medical information (diagnosed medical conditions). Data were extracted by one of the study's authors with subsequent reliability checks of data conducted by the primary investigator who also reviewed each record to confirm the accuracy.

Data analysis

Qualitative and quantitative analyses were conducted of data collected from the medical records of children and their parents participating in a risk reduction group intervention. Qualitative analysis was conducted of the children's responses obtained from the interviews, whereas medical records data and the parent questionnaire involved quantitative analysis.

Prior to conducting qualitative analysis of the children's interview responses, members of the research team (two with expertise in clinical psychology and a social worker with expertise in working with children with developmental disabilities) developed an *a priori* framework for categorizing responses. Children's responses were first analysed as to correct and incorrect responses to knowledge questions. Based upon this first-level analysis, members of the research team independently coded short-answer responses using a thematic approach to organize participants' responses to each question into groups of similarly themed responses. For example, when asked about how one could respond to an inappropriate touch ('Tell me things you can do if you get a not okay touch'), responses 'punch them' and 'kick them in their private parts' were grouped together as physically aggressive responses along with other responses with similarly themed content. Participant responses interview questions were generally brief and all intelligible responses were considered meaningful for the purposes of analysis. After independent coding, the team met to explore areas of agreement and to reach consensus wherein there were differences.

In addition to being categorized based on theme, short-answer responses assessing children's knowledge on specific topics were also coded as correct and incorrect. Quantitative data, including both participant demographic data and parent responses to Likert scale questions, were analysed using descriptive statistics to identify frequencies and themes of responding among parents. Additionally, a series of independent t-tests were conducted to examine the mean differences in

parent perceptions of children's knowledge between children who correctly answered questions and those who did not. All the analyses with quantitative data were conducted using SPSS 18.0 (Chicago, IL, USA).

Results and Discussion

Children's knowledge of personal safety skills

As shown in Table 2, the following areas of knowledge regarding personal safety skills were examined among children with developmental disabilities.

Knowledge regarding puberty and physical development

Ten (27%) children were able to provide more than one medical name for a private body part, while 17 children (73%) were unable to provide any medically correct term for private body parts. Responses coded as incorrect include non-private body parts (e.g. hand, face) and unrelated word (e.g. body, house) and no response (e.g. 'I don't know'). Similarly, a large majority of children (n = 32, 86.5%) were unable to describe a physical change associated with puberty. This includes children who responded that they did not know, as well as those who provided responses that did not reflect accurate understanding of physical development during puberty (e.g. 'change clothes', 'swimming'). Only five children (13.5%) were able to state at least one correct physical change during puberty, including responses such as 'boobs grow bigger', 'boys get pubic hair' and 'deeper voice'.

Table 2 Children's knowledge of personal safety skills (N = 37)

Variables	*n (%)*
Knowledge regarding private body parts	
Correctly answered	10 (27)
Not correctly answered	27 (73)
Knowledge regarding physical change associated with puberty	
Correctly answered	5 (13.5)
Not correctly answered	32 (86.5)
Ability to identify an appropriate touch	
Correctly identified	17 (45.9)
Not correctly identified	20 (54.1)
Ability to identify an inappropriate touch	
Correctly identified	31 (83.8)
Not correctly identified	6 (16.2)
Ability to identify safety skills	
Correctly identified	20 (54.1)
Not correctly identified	17 (45.9)
Ability to identify adult helpers	
Correctly identified	22 (59.5)
Not correctly identified	15 (40.5)
Types of helpers identified (multiple responses)	
Parent	15 (40.5)
School staff	13 (35.1)
Other relative	4 (10.8)
Helping professional	4 (10.8)
Peer	4 (10.8)
Other	5 (13.5)

'Not correctly answered' or 'not correctly identified' included both 'no response' and 'incorrect responses'.

Ability to identify an appropriate and inappropriate touch

Seventeen children (45.9%) were able to correctly respond to the vignette describing an example of an appropriate touch, identifying a physician giving an inoculation as an 'okay touch'. However, the same number of participants responded in ways that suggested that this was an inappropriate touch (e.g. 'not okay', 'bad') and three children did not respond to this prompt. Far more children (n = 31, 83.8%) were able to correctly identify when an inappropriate sexualized touch was described. However, four participants (10.8%) responded that this was an acceptable touch (e.g. 'okay', 'good') and two participants (5.4%) did not respond.

Knowledge of safety skills to respond to an inappropriate touch

When participants were asked what they would do in response to an inappropriate touch, more than half of participants (n = 20, 54.1%) were able to describe more than one adaptive response. The most common response provided by participants involved seeking help, with 32.4% of participants (n = 12) indicating that they would tell an adult or otherwise seek help (e.g. 'tell my mom or a teacher', 'call the police'). The next most common responses were statements indicating 'no', with 24.3% of participants (n = 9) responding that they would verbally communicate to the initiator of the inappropriate touch to stop (e.g. 'tell them to back off', 'say no touch'). Several participants responded with statements indicating aggressive responses that were identified as inappropriate (e.g. 'hit them and kick them'; n = 5, 13.5%), a negative appraisal of the situation without clearly indicating a behavioural response (e.g. 'is not good', 'trouble'; n = 5, 13.5%), getting away from the situation (e.g. 'run away', 'move out of the way'; n = 4; 10.8%) and the emotional responses they anticipated

(e.g. 'get mad', 'cry'; $n = 3$; 8.1%). Five participants (13.5%) provided responses that were not clearly defined (e.g. 'get grounded', 'do a shot'), and four participants (10.8%) did not respond. Almost half of the participants (45.9%; $n = 17$) were unable to describe an adaptive response (e.g. 'communicating "no"', 'telling an adult').

Ability to identify adult helpers

When asked to identify a person who could help them, 40.5% of participants ($n = 15$) named one adult who could help and 18.9% of participants ($n = 7$) identified two or more adults who could help. However, 40.5% ($n = 15$) of children did not clearly identify any adult who could help. The most commonly identified helpers were parents (e.g. 'my mom', 'dad'; 40.5%, $n = 15$) and a school staff member (e.g. teacher or principal; 35.1%, $n = 13$). Other relatives (e.g. 'my aunt', 'my grandma'; $n = 4$, 10.8%), helping professionals (e.g. 'therapist', 'the police'; $n = 4$, 10.8%), peers (e.g. 'my friend'; $n = 4$, 10.8%) and other individuals (e.g. 'an adult', 'myself'; $n = 3$, 8.1%) were identified. Three participants provided nonsensical responses, and five participants (13.5%) did not respond to this question.

Parent perceptions of children's knowledge

As shown in Table 3, parents' perceptions regarding their children's knowledge varied. The perception that children were to identify physical changes associated with puberty was relatively high (M = 2.77, SD = 1.31), while the perception that children were able to distinguish between an appropriate and inappropriate touch was lower (M = 2.03, SD = 1.38). More than half of parents indicated that their child was rarely or never able to use accurate names for private body parts ($n = 19$; 54.3%) or to identify physical changes associated with puberty ($n = 23$; 62.2%). When asked how often their child would be able to distinguish between an appropriate and inappropriate touch, approximately one-third of parents ($n = 12$, 32.4%) endorsed 'never' or 'rarely'. A similar number ($n = 11$, 29.7%) reported that their children could sometimes make this distinction. Only 21.6% of parents ($n = 8$) conveyed confidence that their children could frequently or always tell the difference between an appropriate and inappropriate touch. Several respondents ($n = 6$, 16.2%) endorsed 'not sure', indicating uncertainty about their children's ability. Not only did many parents identify their children's lack of ability to consistently recognize an inappropriate touch; over one-third ($n = 14$, 37.8%) of parents believed that their child would not know how to respond if he or she received an inappropriate touch. Regarding parent perception of children's ability to maintain personal safety, more than half of parents ($n = 21$, 56.7%) reported that their child was 'never' or 'rarely' able to keep themselves safe. In contrast, only four (10.8%) parents believed that their child could 'frequently' or 'always' keep himself or herself safe.

Mean differences in parent perceptions and children's knowledge

As shown in Table 4, parents' perceptions regarding their children's knowledge of physical changes associated with puberty were significantly higher among the parents of children with accurate responses

Table 3 Parent perceptions of children's knowledge ($N = 37$)

	No response/ not sure n (%)	*Rarely or never n (%)*	*Sometimes n (%)*	*Frequently or always n (%)*	*M (SD)*
My child is able to:					
Name private body parts	2 (5.4)	19 (54.3)	10 (27.0)	6 (16.2)	2.37 (1.42)
Identify physical changes associated with puberty	3 (8.1)	23 (62.2)	5 (13.5)	6 (16.2)	2.77 (1.31)
Distinguish between an appropriate and inappropriate touch	6 (16.2)	12 (32.4)	11 (29.7)	8 (21.6)	2.03 (1.38)
Know how to respond to an inappropriate touch	9 (24.3)	14 (37.8)	8 (21.6)	6 (16.2)	2.28 (1.14)
Keep himself/herself safe	1 (2.7)	21 (56.7)	11 (29.7)	4 (10.8)	2.46 (1.37)

Table 4 Mean differences in parent ratings of children's knowledge by children's demonstrated knowledge

			Parent ratings of children's knowledge My child is able to:	
Children's demonstrated knowledge		*N*	*M (SD)*	*t*
			Name private body parts	
Name private body parts	Correct	9	2.89 (1.76)	−1.284
	Incorrect	26	2.19 (1.27)	
			Identify physical changes associated with puberty	
Identify physical changes associated with puberty	Correct	3	4.0 (1.0)	−2.854**
	Incorrect	31	1.84 (1.27)	
			Distinguish between an appropriate and inappropriate touch	
Identify an appropriate touch	Correct	15	3.0 (1.51)	−0.928
	Incorrect	16	2.56 (1.09)	
			Distinguish between an appropriate and inappropriate touch	
Identify an inappropriate touch	Correct	25	2.68 (1.31)	0.813
	Incorrect	6	3.17 (1.33)	
			Know how to respond to an inappropriate touch	
Identify safety skills	Correct	14	2.43 (1.40)	0.135
	Incorrect	14	2.50 (1.40)	

Parent ratings of children's ability to use specific skills using a 5-point Likert scale ranging from 1 'never' to 5 'always'.
**$P < 0.01$

than among the parents of children who had not correctly answered ($P < 0.01$). In other areas of knowledge assessed, there were no statistically significant differences between the parents of children with accurate knowledge responses and those parents of children who had not accurately responded.

Conclusions

Given the alarmingly high rates of sexual abuse among children with developmental disabilities, interventions to reduce the risk for abuse are clearly indicated. This exploratory study provides information about specific areas of knowledge related to sexual abuse risk reduction that is lacking among children with developmental disabilities, the findings not previously reported in the literature with this population of children. The results of this study suggest that knowledge deficits regarding personal safety skills are present for some children with developmental disabilities and that parents also perceive their children as lacking the necessary knowledge and skills to keep themselves safe. Children's responses indicated a lack of basic understanding of their own bodies, which is consistent with the literature on this topic (McCabe & Schreck 1992; Mansell *et al.* 1998; Jahoda & Pownall 2014). Notably, nearly one-fourth of participants had entered adolescence and likely had personal experience with physical changes that occur during puberty. Without an understanding of the changes that happen during puberty, experiences such as onset of menstruation or the development of secondary sex characteristics can be confusing or frightening (Sevlever *et al.* 2013). This may increase children's vulnerability, as they may attempt to understand their bodies in ways that are unsafe (e.g. sexualized behaviour), or seek information from untrustworthy individuals.

Additionally, the majority of participants were unable to name genitals and other body parts that should be kept private from others. Some participants also lacked the knowledge of appropriate terms for body parts, providing colloquial or idiosyncratic terms for their genitals. Adults may misunderstand informal or idiosyncratic terms, thus presenting the risk that a child's disclosure of sexualized behaviour or abuse may not be recognized as such.

Several participants had difficulty distinguishing an unpleasant touch from an inappropriate touch, indicating their confusion about the meaning of a painful, but socially appropriate touch. This is indicative of the difficulty recognizing appropriate social boundaries with which children with developmental disabilities may struggle, a concern that has been particularly emphasized regarding children and adolescents with autism spectrum disorder (Sevlever *et al.* 2013; Cridland *et al.* 2014).

While the ability to recognize an inappropriate or sexualized touch is extremely important, so is the ability to respond in a way that maximizes safety and minimizes risk for re-victimization. Many participants were able to identify an adult who could provide assistance if they needed help, most frequently identifying parents and teachers/school staff. Although children may have the idea that telling someone about abuse is important, many may lack a clear understanding of who can help. For example, disclosing to a peer is unlikely to result in the same protective response to abuse as telling a trusted adult. It is also important for children to have more than one identified helper given the high rates of sexual abuse of children with developmental disabilities perpetrated by family members, service providers or acquaintances.

In regard to responses from parents, the results indicated that many parents lacked certainty regarding their children's knowledge of personal safety. While some parents were able to more accurately assess their children's knowledge, overall, parents were not able to do this consistently. Although this finding could be associated with the small sample size, parents' uncertainty regarding their children's knowledge about personal safety could also indicate that many parents may not have talked to their children about these topics. This would be consistent with findings in the literature that many parents of children with developmental disabilities do not talk to their children about sexuality and sex education (Isler *et al.* 2009; Gurol *et al.* 2014). The overall lack of confidence that parents of children with developmental disabilities had about their children's ability to keep themselves safe from abuse is consistent with Ballan's (2012) finding that parents of children with autism spectrum disorder fear the risk for sexual victimization associated with their children's developmental disabilities.

This study was a preliminary inquiry into a topic that has been underrepresented in the literature. As such, the study had several limitations including a small sample with limited generalizability. Participants in this study represented a clinical sample of children with comorbid psychiatric diagnoses. All of the children in the study were identified by a professional as in need of abuse risk reduction education. To increase the generalizability of findings, future research should examine the knowledge of personal safety skills among a non-clinical sample of children with developmental disabilities. To address the limitations in this study, it is recommended that future research increases methodological rigour by utilizing broader recruitment strategies, a larger sample and a more highly defined protocol.

Although this exploratory study examined the differences in parents' perceptions of children's knowledge (in terms of correct and incorrect responses), it was not within the scope of this study to examine disparity of parents' perceived risk with children's actual knowledge due to the small clinical sample. Future studies should examine the disparity or concordance of parents' perceptions of their children's knowledge on topics related to personal safety with children's demonstrated knowledge in these areas. Finally, although researchers strived to ensure the reliability and validity of the measures through pilot testing, the questionnaire and interview were developed due to the lack of existing measures validated to assess the safety skill knowledge in the target population. Further evaluation to establish reliable and valid measures of individual and familial risk factors for sexual abuse among children with developmental disabilities is needed.

The results of this exploratory study support the clinical recommendations of experts in the field for the need for interventions that provide education about sex, physical development and personal safety for children with developmental disabilities and their families in order to reduce risk for abuse. The high rate of sexual abuse among children with developmental disabilities cannot be ignored and necessitates action at the individual, community and societal level. The present authors believe that interventions should involve education of individual children and their family members, community members who work with children and the general public. Education should focus on the risk factors for abuse that affect children with developmental disabilities, as well as resiliency factors that can be promoted to mitigate risks.

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Correspondence

Any correspondence should be directed to Hannah Miller, USC University Center for Excellence in Developmental Disabilities, Children's Hospital Los Angeles, 4650 Sunset Blvd., MS #53, Los Angeles, CA 90027, USA (e-mail: hamiller@chla.usc.edu).

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