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Health and Safety Checklist for Early Care and Education Programs to Assess Key National Health and Safety Standards

Abbey Alkon¹ · Roberta Rose¹ · Mimi Wolff¹ · Jonathan B. Kotch² · Susan S. Aronson³

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Abstract

Objectives The project aims were to (1) develop an observational Health and Safety Checklist to assess health and safety practices and conditions in early care and education (ECE) programs using *Stepping Stones To Caring For Our Children, 3rd Edition* national standards, (2) pilot test the Checklist, completed by nurse child care health consultants, to assess feasibility, ease of completion, objectivity, validity, and reliability, and (3) revise the Checklist based on the qualitative and quantitative results of the pilot study.

Methods The observable national health and safety standards were identified and then rated by health, safety, and child care experts using a Delphi technique to validate the standards as essential to prevent harm and promote health. Then, child care health consultants recruited ECE centers and pilot tested the 124-item Checklist. The pilot study was conducted in Arizona, California and North Carolina. The psychometric properties of the Checklist were assessed.

Results The 37 participating ECE centers had 2627 children from ethnically-diverse backgrounds and primarily low-income families. The child care health consultants

found the Checklist easy to complete, objective, and useful for planning health and safety interventions. The Checklist had content and face validity, inter-rater reliability, internal consistency, and concurrent validity. Based on the child care health consultant feedback and psychometric properties of the Checklist, the Checklist was revised and rewritten at an 8th grade literacy level.

Conclusion The Health and Safety Checklist provides a standardized instrument of observable, selected national standards to assess the quality of health and safety in ECE centers.

Keywords Child care · Early childhood education · Health education · Safety · Assessment · Instrument development

Significance

When children attend low quality licensed or unlicensed child care programs, they may be exposed to unsafe health and safety environments which put them at risk for illnesses and injuries.

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Introduction

Children's academic, socio-emotional, and behavioral development, and their long term wellbeing, are affected by the overall quality of the early care and education (ECE) programs they attend [1–5]. Children who attend high quality compared to low quality ECE programs are less likely to adopt harmful health habits (e.g., smoking, use of illicit drugs, failing to wear seat belts, teen pregnancy) and antisocial behaviors (e.g., violent behavior, arrests and

incarceration), while being more likely to have pro-social and health promoting behaviors (e.g., be employed, have socially desirable cognitive and character skills, earn higher wages, have health insurance, exercise, eat healthful foods) [5–9]. Health and safety are the foundations of high quality ECE [10], yet there is no standardized, national instrument to objectively assess health and safety as a key component of quality.

In the United States (U.S.), 61 % of children less than 5 years of age are in a regular child care arrangement [11]. As of 2011, there were a total of 107,286 licensed child care centers in the U.S. [12]. State child care licensing regulations only provide a baseline of protection for the health and safety of children in out-of-home care [12]. Two studies, one with 77 ECE programs in North Carolina (NC) and the other with 111 centers in California (CA), showed that the majority of these programs had no written policies that addressed medication administration, inclusion of children with special health care needs, or transportation safety [13, 14]. In CA, only 60 % of the licensed centers met the recommended national health and safety standards for the proper storing of medications, 50 % for proper diapering of infants and toddlers, and 20 % for proper handwashing by staff and children before and after toileting and meals [13].

According to the Centers for Disease Control and Prevention, unintentional injuries are the number one cause of childhood deaths [15]. In a study of 77 ECE programs in NC, the rate of medically-attended injuries was 0.02 per 100 child days [14]. In a Consumer Product Safety Commission study of 220 licensed ECE programs, 67 % of the programs had at least one safety hazard. These hazards included soft bedding, no safety gates on stairs, and unsafe playground surfaces [16]. Most injuries are preventable using well-known safety measures.

Many ECE programs are assessed for overall quality using standardized Environment Rating Scales (ERS), e.g., the Early Childhood Environment Rating Scale-Revised (ECERS-R) [17] for preschool classrooms and the Infant and Toddler Environment Rating Scale-Revised (ITERS-R) [18] for infant/toddler classrooms. These ERSs are in widespread use across the nation to assess quality in the growing number of states using Quality Rating and Improvement Systems (QRIS). The ECERS-R and the ITERS-R items are rated on a 7-point Likert scale from inadequate to excellent. One of the subscales, Personal Care Routines (PCR), contains five items specifically about health and safety: meals/snacks, nap/rest, diapering/toileting, health practices, and safety practices. The PCR subscale had the lowest rating of the ERS subscales in a study in four states which included 228 infant/toddler classrooms. Seventy-five percent of all the infant/toddler classrooms had a score of one (i.e., inadequate) on one or more of the health and safety items [19].

National health and safety performance standards for ECE programs were initially developed in 1992 by the American Academy of Pediatrics, American Public Health Association, and National Resource Center for Health and Safety in Child Care and Early Education, funded by the Maternal Child Health Bureau (MCHB). Since 1997, the MCHB has supported Healthy Child Care America initiatives, including the National Resource Center for Health and Safety in Child Care and Early Education (<http://nrckids.org/>), National Training Institute for Child Care Health Consultants (CCHCs) (<http://nti.unc.edu/>), and Child Care and Health Partnership at the American Academy of Pediatrics (www.healthychildcare.org). These initiatives and the MCHB-funded project that preceded them contributed to developing (1992) and updating the national health and safety performance standards (2002) in addition to the training and technical assistance for CCHCs. In 2011, lead agencies and 86 technical experts were grouped into ten technical panels and they significantly revised, updated, or wrote new evidence-based standards to create *Caring for our Children, Third Edition (CFOC3)* [20] with 686 standards.

In 2013, *Stepping Stones, 3rd Edition (SS3)* [21] was published online with 138 of the CFOC3 standards which, when followed or implemented, are most likely to prevent serious adverse outcomes for children/staff in ECE programs. Ten members of the CFOC3 expert panels and 55 other experts identified the 138 CFOC3 standards included in SS3.

Other national quality improvement initiatives for ECE programs are recognizing the importance of health and safety. The Federal Race-to-the Top Early Learning Challenge Program requires the inclusion of health and safety improvements as a component of the initiative. The revisions to the Child Care Development Fund (CCDF) Block Grant by the Health and Human Services Department [22] states that, "...health and safety is the foundation for building a high quality early learning environment." Accountability starts with the measurement of performance and the ability to meet national standards. Currently there is no standardized instrument to objectively assess the implementation of the health and safety national performance standards.

Child care health consultation intervention programs have been shown to help ECE programs maintain or develop up-to-date health and safety policies, support healthy hygiene, improve immunization rates, improve hand washing practices, and reduce infectious illnesses [13, 14, 23–26]. CCHCs need standardized assessment instruments to determine the strengths and weaknesses of the health and safety practices in an ECE program and to develop interventions to help the programs improve their ability to meet national standards [13, 14, 27, 28].

Child care licensing regulations are determined independently by each state and provide minimal standards for health and safety. Only 16 states' regulations include the ten basic health and safety standards recommended by pediatric experts [29]. In addition to state licensing, some programs are accredited by professional organizations (e.g., National Association for the Education of Young Children (NAEYC)) and/or government agencies (e.g., Department of Defense, Office of Head Start, National Institute for Early Education Research). Such accreditation systems include a wide range of regulations and standards to identify programs meeting the highest levels of quality. Few of these regulations or accreditations include compliance assessments of current health and safety practices based on *CFOC3* [30, 31]. Child care and health professionals, along with researchers and policy makers, need a standardized health and safety instrument to assess and compare national health and safety standards for ECE programs across the U.S.

Methods

Study Design

The first phase of the project was to develop a pilot Checklist to be used as an observational assessment in ECE centers. The development phase included consultation with an Advisory Committee and used a Delphi process [32] to survey experts working in ECE programs. Then, a pilot study was conducted in ECE centers in Arizona (AZ), CA, and NC. Lastly, the pilot Checklist was revised based on the qualitative feedback from CCHCs and its psychometric properties.

Samples and Settings

The target population of the Delphi process was professionals working in ECE programs providing expertise on health and safety issues.

The pilot study included a convenience sample of ECE centers in AZ, CA, and NC that met the following inclusion criteria: state licensed, enrolled primarily (over 50 %) children receiving federal or state child care subsidies, enrolled children 0–5 years of age, and did not receive monthly CCHC services. The study oversampled the infant/toddler classrooms because these children are at highest risk of infectious illnesses [33] and injuries [34] while attending group care. In AZ and NC, the centers were also participating in their locally-based QRIS program.

The University of California, San Francisco (UCSF) Committee on Human Research approved the study protocol and consent forms. The Delphi survey participants

read consent forms and ECE center directors signed consent forms. The ECE directors each received a \$30 gift card for their center's participation.

Advisory Committee

Seventy-six of the 138 *SS3* standards were identified as observable standards by the research staff. An 'observable' standard was defined as a standard that an assessor can observe in an ECE program, requiring minimal interaction with ECE staff. The Advisory Committee assessed the 76 standards for face and content validity.

Delphi Survey

The Delphi study was completed in several phases. First, key organizations were identified to help reach our target population, professionals with health and safety expertise working in ECE programs (e.g., child care health consultants, child care health advocates, Head Start health managers). Invitations were sent to eight national and state organizations and to independent child care health consultants. The organizations were asked to distribute the invitations to interested members and staff. Independent CCHCs and interested members and staff of the eight organizations were asked to read the consent form and complete the web-based (i.e., Qualtrics®) demographic survey. Ninety-five participants completed the demographic form, and one month later they were sent a link to the full survey. Of the 95 participants, 45 completed the full survey. Forty-two of the surveys were included in the final analyses. Three participants did not meet our inclusion criteria of working in an ECE program.

The Delphi survey asked the participants to review the 76 observable standards and to answer the following questions for each standard:

1. Do you think this standard is essential for preventing harm and promoting health in ECE programs? There were four response options ranging from extremely essential to not essential.
2. How easy would it be for you to help an ECE program meet this standard? There were four response options ranging from extremely easy to extremely difficult.
3. Of the ECE programs you have visited in the past 12 months, how many did not meet this standard? The respondent listed the number of sites visited last year and number of sites which did not meet the standard.
4. Rate the severity of the adverse outcome if this standard is not followed. There were seven response options ranging from extremely low to extremely high.

Pilot Checklist

The pilot Checklist was developed using a similar format and concept used in the UCSF School of Nursing's California Childcare Health Program (CCHP) Health and Safety Checklist developed in 2001 and revised in 2005 [35], based on *Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Out-Of-Home Child Care Programs, 2nd Edition* [36]. The pilot Checklist was developed in a stepwise process as follows:

1. The objective, observable standards, written in language consistent with *CFOC3*, were listed separately or itemized if they included multiple elements.
2. A four-level rating scale with additional options of 'not applicable' or 'not observed' was developed for each item and reviewed with the Advisory Committee. The rating scale included 0 (Never: No components of the item are met), 1 (Sometimes: Less than or 50 % of the components in the item are met), 2 (Usually: 50 % or more but <100 % of the components in the item are met), and 3 (Always: Every component in the item is met).
3. The Checklist's 124 items were divided into three sections: (1) Facilities, Supervision, Interaction, Activity, Sanitation, Nutrition; (2) Pools, Spas, and Hot Tubs; and (3) Infants/Toddlers. A User Manual was written to explain how to complete the Checklist by defining the rating scale for each item.

Data Collection Procedures

The Delphi survey was completed by national, regional, and state experts on health and safety practices and conditions in ECE programs. The CCHCs in the pilot study were given an orientation by the UCSF staff, and there were monthly conference calls to discuss the data collection protocol and obtain qualitative feedback on the process. The ECE directors were interviewed by the CCHCs to collect demographic information about their backgrounds and the children enrolled in their centers. Then, the CCHCs completed the Checklists. In AZ, the ECERS or ITERS was also completed. The UCSF staff had phone meetings with each CCHC to discuss her experiences using the Checklist and User Manual. In addition, the CCHCs were consulted about recommended changes and asked to review the revised Checklist and User Manual.

Data Analysis

Descriptive statistics were calculated for the demographic data and the Checklist's items, subscales, and total score. Cronbach's alpha coefficients were calculated to establish

internal consistency as a measure of reliability for the items in each of the subscales and overall Checklist. To establish concurrent validity, the Checklist items similar to five items on the PCR subscale of the ECERS/ITERS were correlated.

Results

Forty-two health and safety professionals working in ECE programs completed the Delphi survey. Participants were from 16 different states and were mostly female (98 %) and White (81 %). Seventy-seven percent were CCHCs, 19 % were child care health advocates or child care providers, and 4 % worked in regulatory or Head Start agencies. They had a mean (SD) of 18 (13) years of experience in the child care health and safety field and had a mean (SD) age of 52 (11) years. Ninety-three percent ($n = 26/28$) of the CCHCs had completed a formal training program to become a CCHC.

The mean response for each Delphi study question was calculated and then ranked to identify the standards with the highest and lowest ratings. The five standards *least* essential to prevent harm and promote health were oral health (Std. 3.1.5.1.); introduction of solid foods to infants (Std. 4.2.1.1.); helmets (Std. 6.4.2.2); preparing, storing, feeding infant formula (Std. 4.3.1.5.); and trampolines (Std. 6.2.4.4.). The two standards which were difficult for a CCHC to help a program meet were impact surfaces (Std. 6.2.3.1) and discipline measures (Std. 2.2.0.6). The *least* frequently observed standards were pool drain covers (Std. 6.3.1.3); life-saving equipment (Std. 6.3.2.1.); and hot tubs, spas, and saunas (Std. 6.3.5.1.). The survey participants rated the following standards as having the *least* severe adverse outcome if not followed: oral health (Std. 3.1.5.1.), introduction of solid foods to infants (Std. 4.2.1.1.), and fresh air (Std. 5.2.1.1).

Thirty-seven ECE centers participated in the pilot study. Twelve centers were in AZ, 12 in NC, and 13 in CA. The classrooms observed served infants only or infants and toddlers (41 %), toddlers only (27 %) or preschool-age (32 %) children. The centers were located in rural (13 %), urban (57 %), and suburban (30 %) locations. The centers enrolled 2627 children primarily from low income, ethnically diverse families (Table 1). The cost of care was subsidized for 54 % of the children who attended these centers.

The ECE directors had a mean (SD) of 9.2 (9.3) years of employment at the center with a mean (SD) of 21 (12) years in the ECE field. The majority (95 %) were women. Forty-eight percent were White and 38 % were African American. They had a range of educational and specialty backgrounds (Table 1).

Table 1 Children's and center directors' demographics

Children's Ethnic Background (n = 2627)	n (%)
White/European American	946 (36 %)
African American/Black	841 (32 %)
Chinese/Asian/Pacific Islander	210 (8 %)
Latino/Latina/Hispanic	394 (15 %)
Native American/American Indian/Alaskan Native	131 (5 %)
Mixed Ethnicity or Race	105 (4 %)
Total	2627 (100 %)
Center Director Characteristics (n = 37)	n (%)
Education	
No college degree	12 (32 %)
Bachelor of Arts/Bachelor of Science	14 (38 %)
Master of Science or higher	11 (30 %)
Total	37 (100 %)
Area of study in college	
Early Childhood Education	17 (52 %)
Child Development	6 (18 %)
Education	8 (24 %)
Psychology	2 (6 %)
Total	33 (100 %)
Ethnic Background	
White/European American	18 (48 %)
African American/Black	14 (38 %)
Chinese/Asian/Pacific Islander	2 (5 %)
Latino/Latina/Hispanic	1 (3 %)
Native American/American Indian/Alaskan Native	1 (3 %)
Mixed Ethnicity or Race	1 (3 %)
Total	37 (100 %)

The qualitative results from the CCHCs found the Checklists to be user-friendly and easy to understand. The mean time to complete the Checklist was 2 h and 15 min. The Checklist assessments were completed with minimal interaction with the ECE staff. The Checklist items were mostly observable, objective, and clearly written. The CCHCs suggested changes to the Checklist to eliminate double negatives, difficult to understand words, and technical language. The CCHCs reported that items which were different than state licensing regulations were hard to rate, the choice of ratings as 'not observed' versus 'not applicable' was confusing, and some infant/toddler items only related to infants and not toddlers.

The overall mean(SD) of the 124 items on the Checklist was 2.51(1.6) with a range of 2.14–2.76 (Table 2). The subscales with the *highest* ratings (i.e., the standard was met) were medications, supervision, interaction and activity, environmental health, nutrition, infant/toddler relationships, infant activity, infant sleep, and infant/toddler

injury prevention. The subscales with the *lowest* ratings (i.e., not met) were handwashing, tooth-brushing, equipment safety outdoors, and infant/toddler diapering. There were a range of ratings for each of the individual items (Table 3). The items with the *lowest* ratings were having well-stocked first aid supplies, using helmets when children were on tricycles, having carbon monoxide detectors, covering electrical outlets, and applying sunscreen on the children.

The psychometrics of the pilot Checklist were established for content and face validity based on the Delphi study and Advisory Committee feedback. At least 90 % inter-rater reliability was established between the CCHCs with their local expert (i.e., supervisors). Internal consistency (i.e., alpha coefficients) for most of the subscales was moderate to strong (Table 2). The nutrition, outdoor equipment and furnishings, and infant sleep subscales had weak internal consistency. The tooth-brushing, infant activity and infant/toddler diapering subscales' internal consistency could not be calculated since they had too few items or the ratings did not have enough variability.

Concurrent validity was established between the Checklist and PCR subscale for the centers in AZ (n = 12) where the Environment Rating Scale (ERS), either the ECERS-R (n = 3) or ITERS-R (n = 9), was completed (Table 4). The mean Checklist score was weakly, negatively correlated with the PCR subscale score ($r = -0.05$) and negatively, moderately correlated ($r = -0.27$) with the mean ERS score. The correlations between the Checklist items covered on the PCR subscale and the four of the PCR items were positive and ranged from weak to moderate. The nap/rest items were negatively, strongly correlated (Table 3).

The revision of the pilot Checklist was based on the qualitative feedback from the CCHCs and psychometric properties. Four out of 76 standards were dropped because they were low in frequency, not variable in the internal consistency analyses, or identified in the Delphi study as low in frequency or not related to preventing harm and promoting health. The four standards dropped were: telephone on-site (Std. 5.3.1.12), caregivers' use of substances on-site (Std. 3.4.1.1), rescue device by pool (Std. 6.3.2.1), and children's access to hot tubs (Std. 6.3.5.1).

There were other revisions made to the Checklist. (1) Each item's wording was reviewed and revised, if needed, for clarity, simplicity, and literacy level at the 8th grade level per Flesh-Kinkaid readability test. For example, item #80, "Kitchen equipment is clean and in operable condition" was changed to, "Kitchen equipment is clean and in working order." (2) An asterisk was inserted before an item number if the item required the CCHC to talk to a staff

Table 2 Descriptive statistics and alpha coefficients by subscale

Subscales	Mean (SD), range 0–3	# items	Alpha coefficient*	# items*	# centers
<i>Section 1: Emergencies, Medications, Equipment and Furnishings, Supervision, Sanitation, Nutrition (Items 1–93)</i>					
Supervision, Interaction, and Activity	2.79 (0.26)	15	0.68	12	37
Medications	2.74 (0.47)	3	0.66	3	27
Sanitation: Environmental Health	2.73 (0.30)	11	0.58	11	37
Nutrition: Food safety, Food handling, Eating, Drinking	2.67 (0.29)	11	0.07	10	37
Equipment and Furnishings: Indoors and Outdoors	2.48 (0.24)	28	0.54	21	37
Equipment and Furnishings: Outdoors Only	2.20 (0.70)	7	0.21	5	37
Emergencies	2.19 (0.34)	11	0.39	10	37
Sanitation: Handwashing	2.09 (0.69)	5	0.69	5	37
Sanitation: Toothbrushing	1.70 (1.41)	2	–	–	15
Section 1 Total	2.51 (0.16)	93	0.73	75	37
<i>Section 2: Pools, Spas, and Hot Tubs (Items 94–99)</i>					
Section 2 Total	2.20 (0.72)	6	0.82	4	3
<i>Section 3: Infant/Toddler (Items 100–124)</i>					
Infant: Activity	2.79 (0.33)	2	–	–	12
Infant/Toddler: Injury Prevention	2.77 (0.54)	4	0.75	3	26
Infant/Toddler: Relationships	2.74 (0.50)	2	0.69	2	25
Infant: Sleep	2.70 (0.33)	7	0.13	6	18
Infant/Toddler: Nutrition	2.55 (0.52)	7	0.78	6	22
Infant/Toddler: Diapering	2.14 (0.77)	3	–	–	26
Section 3 Total	2.56 (0.33)	25	0.61	21	27
Complete Checklist (Items 1–124)	2.51 (0.16)	124	–	–	37

* Items were deleted from the calculation of the alpha coefficient if there was no variability in the responses. There was no alpha coefficient calculated for subscales with no variability or few items

person. (3) Infant only items were separated from infant/toddler items. (4) Grey shading was applied to the response boxes if the item should not be rated as ‘not observed’ or ‘not applicable’. (5) Each subscale has extra rows for CCHCs to include other state licensing regulations which may differ from the national health and safety standards. Even though the pools, spas, and hot tubs subscale was only completed in three centers, its six standards were retained given the high mortality/morbidity that would result were the standards not met.

Discussion

The pilot Checklist was developed in a systematic way and included key, observable standards from SS3. The Delphi study results validated the SS3 methodology since the majority of the standards were rated as ‘very high’ or ‘extremely high’ in severity if the standards were not met. Since the respondents for the Delphi survey had practical experience in ECE programs and had worked on health and safety issues, their responses supported the technical panels and experts involved in the development of CFOC3 and

SS3. The three standards which the Delphi respondents rated as unable to meet were not included in the final Checklist. The pilot study showed that the Checklist was feasible and easy to complete by CCHCs, and the psychometric properties informed the revision of the pilot Checklist.

Most of the subscales had moderate to strong internal consistency except for nutrition, outdoor equipment and furnishings, and infant sleep which may reflect the difference in structural versus behavioral items. The concurrent validity was weak and inversely related between the overall Checklist and ERS, showing that centers with high ratings on health and safety may have low overall quality and vice versa. Thus, these two instruments are complementary but not redundant. For example, in order to reach the highest rating on the ERS for sleep, center staff need to provide activities for non-sleepers and help children relax to fall asleep, which are not included in the Checklist. Therefore, the different content in the two instruments for the same item represents the different gold standards used to develop each instrument. The ECERS-R and ITERS-R were published in 1998 and 2006 respectively and informed by CFOC2 [36] while the Checklist was informed by the

Table 3 Health and Safety Checklist: Item by mean (SD)

Health and Safety Checklist Subscales and Items	Mean (SD)	# centers
Facilities: Emergencies, Medications, Equipment and Furnishings		
Emergencies		
1. The facility has a sign-in/sign-out system that tracks who (other than children) enters and exits the facility. The system includes name, contact number, relationship to facility (for example, parent/guardian, vendor, guest, consultant), and recorded time in and out. (Std. 9.2.4.7)	1.68 (1.11)	37
2. There is at least one telephone or wireless communication device available for use on site. (Std. 5.3.1.12)	3.00 (0)	37
3. Phone numbers and reporting system for reporting child abuse and neglect (Child Protective Services) are clearly posted where any adult in the facility can easily see them. (Std. 3.4.4.1)	1.51 (1.28)	37
4. The phone number for the Poison Center is posted in a location where it is readily available in emergency situations (for example, next to the telephone). (Stds. 5.2.9.1, 5.2.9.2)	2.51 (1.04)	37
5. Fire extinguishers are inspected annually. Check date on fire extinguisher tag. (Std. 5.1.1.3)	2.83 (0.70)	36
6. Each building or structure has a minimum of two unobstructed exits leading to an open space at the ground floor. (Std. 5.1.4.1)	2.86 (0.54)	37
7. There is a smoke detector system or alarm in working order in each room or place where children spend time. (Std. 5.2.5.1)	2.78 (0.63)	37
8. Carbon Monoxide detectors are present in hallways or areas outside of sleeping areas. (Std. 5.2.9.5)	1.00 (1.41)	35
9. *First aid supplies are well-stocked in each location where children spend time. (Std. 5.6.0.1)	1.43 (0.65)	37
10. *First aid supplies are kept in a closed container, cabinet, or drawer that is labeled, accessible to staff, but inaccessible to children. (Std. 5.6.0.1)	2.62 (0.89)	37
11. *A well-stocked, transportable, first aid kit is available when children leave the facility (for example, walk or transported to another location). (Std. 5.6.0.1)	1.66 (1.00)	32
Medications		
12. *Medications are stored in an organized fashion, inaccessible to children, separated from food, and at the proper temperature (for example, in the refrigerator if stated on prescription). (Std. 3.6.3.2)	2.96 (0.19)	27
13. *Over-the-counter medications are in the original container, labeled by the parent or guardian with the child's name, and accompanied by specific instructions given by the child's prescribing health professional. (Std. 3.6.3.2)	2.41 (0.94)	17
14. *Prescription medications are not expired. They are in their original child resistant container labeled with the following: child's name, date filled, prescribing clinician's name, pharmacy name and phone number, dosage/ instructions, and relevant warnings. (Std. 3.6.3.1)	2.62 (0.80)	21
Equipment and furnishings—indoors and outdoors		
15. *Toxic substances are stored in the original, labeled containers. Material Safety Data Sheets (MSDS) are on-site for each hazardous chemical on the premises. (Std. 5.2.9.1)	2.19 (0.79)	36
16. *Toxic substances are inaccessible to children in a locked room or cabinet. (Std. 5.2.9.1, 5.2.8.1)	2.61 (0.87)	36
17. Fresh air is provided by windows or ventilation system. There are no odors or fumes (for example, mold, urine, excrement, air fresheners, chemicals, pesticides).(Std. 5.2.1.1, 3.3.0.1, 5.2.8.1)	2.62 (0.76)	37
18. Windows open less than 4 inches or are protected by a window guard to prevent exit by children. (Std. 5.1.3.2)	0.89 (1.37)	19
19. There are no unvented gas or oil heaters or portable kerosene space heaters. (Std. 5.2.1.10)	3.00 (0)	36
20. Gas cooking appliances are not used for heating purposes. Charcoal grills are not used indoors. (Std. 5.2.1.10)	3.00 (0)	27
21. Portable electric space heaters are not left on when unattended, not accessible to children, not used with an extension cord, and placed on the floor at least three feet from curtains, papers, furniture, and any flammable object. (Std. 5.2.1.11)	3.00 (0)	12
22. All electrical outlets accessible to children are tamper resistant or have safety covers attached to the electrical outlet by a screw or other means to prevent removal by a child. (Std. 5.2.4.2)	1.74 (1.46)	34
23. *There are no firearms, pellet or BB guns, darts, bows and arrows, cap pistols, stun guns or paint ball guns, or objects manufactured for play as toy guns visible. (Std. 5.5.0.8)	2.92 (0.49)	37
24. Plastic bags, matches, candles, and lighters are stored out of reach of children. (Stds. 5.5.0.7, 5.5.0.6)	2.88 (0.33)	26
25. Children do not have access to balloons or inflated objects that are treated as balloons, such as latex gloves. (Stds. 6.4.1.5, 6.4.1.2)	2.92 (0.49)	37
26. No electrical devices accessible to children are located so they could be plugged into an electrical outlet while a person is in contact with a water source, such as sinks, tubs, water tables, and swimming pools. (Std. 5.2.4.4)	3.00 (0)	29
27. Bathtubs, buckets, diaper pails, and other open containers of water are emptied immediately after use. (Std. 6.3.5.2)	2.75 (0.87)	12

Table 3 continued

Health and Safety Checklist Subscales and Items	Mean (SD)	# centers
28. Children do not play in areas where there is any body of water including tubs, pails, sinks, toilets, swimming pools, ponds, irrigation ditches, or built-in wading pools, unless the supervising adult is within an arm's length providing "touch supervision". (Std. 2.2.0.4)	3.00 (0)	17
29. Adults do not consume hot liquids in child care areas. (Std. 4.5.0.9)	3.00 (0)	37
30. Hot liquids and food (more than 120 °F) are kept out of reach of children. (Std. 4.5.0.9)	2.91 (0.51)	35
31. Electrical cords from any appliance, including coffee pots, are not within the reach of children. (Std. 4.5.0.9)	2.68 (0.64)	34
32. Equipment and play areas do not have the following: sharp points or corners; splinters or protrusions that may catch a child's clothing (for example, nails, pipes, wood ends, long bolts); flaking paint; loose or rusty parts; small parts that may become detached or present a choking, aspiration, or ingestion hazard; strangulation hazards (for example, straps, strings); components that can snag skin, pinch, sheer, or crush body tissues. (Stds. 5.3.1.1, 6.2.1.9)	2.53 (0.51)	36
33. To prevent entrapment of a child's head or limbs, all openings in play or other equipment are too large for a child's head or limbs to get stuck in or too small for a child's body to fit into. Openings are smaller than 3.5 inches or larger than 9 inches. There are no rings on long chains. (Stds. 5.3.1.1, 6.2.1.9)	2.83 (0.38)	36
34. To prevent entrapment of fingers, openings are smaller than 3/8th inch or larger than 1 inch. (Std. 6.2.1.9)	2.86 (0.35)	36
35. All pieces of climbing equipment are placed over and surrounded by loose fill materials raked to maintain proper depth/distribution or a unitary material intended as a shock-absorbing play surface that meets ASTM International standards. (Std. 6.2.3.1, Appendix Z)	2.08 (1.15)	25
36. Fall zones extend at least 6 feet beyond the perimeter of stationary climbing equipment. (Std. 6.2.3.1)	2.25 (0.85)	24
37. There are no tripping hazards. (Std. 5.3.1.1)	1.62 (1.52)	37
38. There are no tip-over hazards such as chests, bookshelves, and televisions. (Std. 5.3.1.1)	2.16 (1.34)	37
39. Hazardous equipment (for example, child care equipment needing to be repaired, lawn mowers, gardening tools not intended for child use, tractors) is not present or is inaccessible to children by means of barriers such as fences. (Std. 5.7.0.4)	2.72 (0.85)	36
40. Guardrails or protective barriers are at least 36 inches in height located at open sides of stairs, ramps, porches, balconies, and other walking surfaces from which there is a more than a 30 inch vertical distance to fall. (Std. 5.1.6.6)	2.54 (0.88)	13
41. Trampolines are not accessible to children. (Std. 6.2.4.4)	3.00 (0)	6
42. All children one year of age and over wear properly fitted and approved helmets while riding toys with wheels (e.g., tricycles, bicycles) or using any wheeled equipment (for example, rollerblades, skateboards). Helmets are removed as soon as children stop riding wheeled toys or using wheeled equipment. (Std. 6.4.2.2)	0.04 (0.19)	28
Equipment and furnishings—outdoors only		
43. Children play outdoors each day unless weather conditions pose a significant health risk (for example, wind chill factor at or below minus 15 °F, heat index at or above 90 °F.). (Std. 3.1.3.2)	2.64 (0.90)	36
44. The outdoor play areas are enclosed with a fence or natural barrier that allow observation of children. Openings in fences and gates are no larger than 3.5 inches. (Std. 6.1.0.8)	2.68 (0.60)	31
45. Enclosures outside have at least two exits, one being remote from the building. All gates have a latch that cannot be opened by children. All gates are equipped with self-closing, positive latching closure mechanisms. (Std. 6.1.0.8)	1.57 (1.19)	30
46. Shade is provided outside (for example, trees, tarps, umbrellas). Children wear hats or caps with a brim to protect their faces from the sun if they are not in a shaded area. (Std. 3.4.5.1)	2.30 (0.85)	33
47. Broad spectrum sunscreen with SPF of 15 or higher is available for use and is not applied to infants 6 months of age or younger. (Std. 3.4.5.1)	1.19 (1.47)	31
48. Outside play areas are free from bodies of water including unfenced swimming pools, wading pools, ditches, quarries, canals, excavations, fish ponds, and water retention/detention basins. (Std. 6.1.0.6)	3.00 (0)	29
49. All water hazards (for example, swimming pools, stationary wading pools, ditches, fish ponds, water retention/detention basins) are enclosed with a fence at least 4–6 feet high and comes within 3 ½ inches of the ground. (Std. 6.3.1.1)	3.00 (0)	8
Supervision, interaction and activity		
50. Ratios: Indoors: Time (h/min): ___/___ Ages of children observed: (circle all that apply) ≤12 months, 13–35 months, 3 years, 4–5+ years # of children ___ # of staff ___ child/staff ratio: ___:___ (Std. 1.1.1.2)	2.49 (1.12)	37
51. Ratios: Outdoors: Time (h/min): ___/___ Ages of children observed: (circle all that apply) ≤12 months, 13–35 months, 3 years, 4–5+ years # of children ___ # of staff ___ child/staff ratio: ___:___ (Std. 1.1.1.2)	2.24 (1.30)	29

Table 3 continued

Health and Safety Checklist Subscales and Items	Mean (SD)	# centers
52. Children are directly supervised by sight and hearing at all times, indoors and outdoors, including when sleeping, going to sleep, or waking up. (Std. 2.2.0.1)	2.86 (0.35)	37
53. Caregivers/Teachers use simple rules for behavior that children can understand. They use clear, direct and simple commands, and descriptive praise. (Std. 2.2.0.6)	2.78 (0.49)	37
54. Caregivers/Teachers encourage positive behavior, promote self-regulation, and model desired behavior. (Std. 2.2.0.6)	2.84 (0.44)	37
55. Caregivers/Teachers support children in learning appropriate social skills and emotional responses and provide predictable daily routines and schedules. (Std. 2.2.0.6)	2.92 (0.36)	37
56. Caregivers/Teachers only use "time-out" for persistent, unacceptable behavior. (Std. 2.2.0.6)	2.83 (0.41)	6
57. There is no physical or emotional abuse or maltreatment and no physical punishment or threat of physical punishment of a child. (Std. 2.2.0.9)	3.00 (0)	37
58. Caregivers/Teachers do not use threats, humiliation (public or private), profane or sarcastic language, or make derogatory remarks about the child or the child's family. (Std. 2.2.0.9)	2.92 (0.36)	37
59. Caregivers/Teachers do not use tobacco, alcohol, or illegal drugs during the child care program's paid time, including break time. (Std. 3.4.1.1)	3.00 (0)	37
60. Children are not physically restrained unless their safety or that of others is at risk. (Std. 2.2.0.10)	3.00 (0)	35
61. Children engage in moderate to vigorous activities such as running, climbing, dancing, skipping, and jumping. (Std. 3.1.3.1)	2.56 (0.97)	36
62. Children engage in structured activities and games that promote movement. (Std. 3.1.3.1)	2.12 (1.18)	26
63. Food is not used or withheld as a bribe, reward, or punishment. (Std. 2.2.0.9)	2.97 (0.17)	36
64. Physical activity/outdoor time is not taken away as punishment. (Std. 2.2.0.9)	2.97 (0.17)	36
Sanitation: Personal Hygiene, Environmental Health Personal Hygiene- Handwashing		
65. Situations or times that children and staff should perform hand hygiene are posted in all food preparation, hand hygiene, diapering, and toileting areas. (Std.3.2.2.1)	1.14 (1.40)	37
66. Handwashing Procedures- <i>Staff</i> Moisten hands with water and apply soap (not antibacterial). Rub hands together into a soapy lather. All hand surfaces are washed including fronts and backs and between fingers from wrists to finger tips. Hands are rinsed with running water and dried with a paper or single use cloth towel. (Std. 3.2.2.2)	2.35 (0.68)	37
67. Handwashing Procedures- <i>Children</i> Children wash their hands or have their hands washed. Moisten hands with water and apply soap (not antibacterial). Rub hands together into a soapy lather. All hand surfaces are washed including fronts and backs and between fingers from wrists to finger tips. Hands are rinsed with running water and dried with a paper or single use cloth towel. (Std. 3.2.2.2)	2.28 (0.66)	36
68. Caregivers/Teachers assist children with handwashing at a sink when children can stand but cannot wash their hands independently. Children's hands hang freely under the running water either at a child level sink or with a safety step. (Std. 3.2.2.3)	2.65 (0.73)	34
69. Hand hygiene with an alcohol-based sanitizer is only used by adults and children as an alternative to handwashing with soap and water if hands are not visibly soiled. Hand sanitizers are only used for children over 24 months and with adult supervision. (Stds. 3.2.2.2, 3.2.2.3)	2.25 (1.39)	8
Personal Hygiene—Toothbrushing		
70. In facilities where toothbrushes are present, toothbrushes are not worn or frayed, and fluoride toothpaste is present. (Std. 3.1.5.1)	2.44 (0.88)	9
71. *Except in the case of children who are known to brush their teeth twice a day at home, caregivers/teachers brush children's teeth or monitor tooth brushing activities at least once during the hours that the child is in child care. (Std. 3.1.5.1)	1.75 (1.54)	12
Environmental Health		
72. There is no clutter, trash, water damage, or standing water on the premises. (Std. 5.2.8.1)	2.76 (0.64)	37
73. Objects and surfaces are kept clean of dirt, debris, and sticky films. (Std. 3.3.0.1)	2.89 (0.31)	37
74. There are no cracks or holes in walls, ceilings, or screens. (Std. 5.2.8.1)	2.89 (0.31)	37

Table 3 continued

Health and Safety Checklist Subscales and Items	Mean (SD)	# centers
75. *Non-permeable disposable gloves are available for handling blood and blood-containing body fluids. (Std. 3.2.3.4)	2.68 (0.88)	37
76. *Infectious and toxic waste is stored separately from other waste. (Std. 5.2.7.6)	2.52 (0.95)	23
77. Hard, non-porous surfaces contaminated with potentially infectious body fluid (for example, toilets, diaper changing tables) are disinfected with an EPA registered disinfectant according to label instructions. (Std.3.3.0.1)	2.37 (0.85)	30
78. Food surfaces (for example, dishes, utensils, dining tables, high chair trays, cutting boards, or objects intended for the mouth such as pacifiers and teething toys) are sanitized in a dishwasher or by using an EPA registered sanitizer according to label instructions. (Std. 3.3.0.1)	2.47 (0.76)	32
79. Children are not in close proximity during sanitizing and disinfecting procedures. (Std. 3.3.0.1)	2.50 (0.85)	36
80. Kitchen equipment is clean and in operable condition. Food surfaces are in good repair, free of cracks and crevices, and made of non-porous smooth material that is kept clean and sanitized. (Std. 4.8.0.3)	2.97 (0.17)	34
81. The food preparation area of the kitchen is separate from eating, play, laundry, toilet, bathroom, and diapering areas, and areas where animals are permitted. (Std. 4.8.0.1)	2.91 (0.51)	35
82. The food preparation area of the kitchen is separated by a door, gate, counter, or room divider. (Std. 4.8.0.1)	2.76 (0.78)	34
Nutrition: Food Safety/Food Handling, Eating and Drinking Food Safety/Food Handling		
83. Home-canned food, food from dented, rusted, bulging, or leaking cans, and food from cans without labels are not present. (Std. 4.9.0.3)	2.96 (0.21)	23
84. All fruits and vegetables are washed thoroughly with water prior to use. (Std. 4.9.0.3)	3.00 (0)	25
85. Meat is labeled as being from government-inspected sources. Dairy product labels state that they are pasteurized. (Std. 4.9.0.3)	2.87 (0.51)	30
86. Commercial fruit juice has a label stating the juice is pasteurized and fresh squeezed fruit and vegetable juices are squeezed just prior to serving. (Std. 4.9.0.3)	2.57 (1.08)	21
87. Meat, fish, poultry, milk, and egg products are refrigerated or frozen until immediately before use. Refrigerators have a thermometer and are kept at 41 °F or lower. (Std. 4.9.0.3)	2.56 (0.94)	36
88. Individual children's food allergies are posted prominently in the classroom and/or wherever food is served. (Std. 4.2.0.10)	2.35 (1.17)	31
Eating and Drinking		
89. Children 2 years of age and older are served skim or 1 % milk. (Std. 4.9.0.3)	2.77 (0.65)	26
90. Drinking water is available, in indoor and outdoor areas, throughout the day for children over 6 months of age. (Std. 4.2.0.6)	2.25 (1.13)	36
91. A variety of nourishing foods is served at meals and snacks including fruits, vegetables, whole and enriched grains, protein, and dairy. (Std. 4.2.0.3)	2.83 (0.38)	36
92. Children under 4 years of age are not offered foods that are associated with choking among young children (for example, hot dogs and other meat sticks (whole or sliced into rounds), raw carrot rounds, whole grapes, hard candy, nuts, seeds, raw peas, hard pretzels, chips, peanuts, popcorn, rice cakes, marshmallows, spoonfuls of peanut butter, or chunks of meat larger than can be swallowed whole). (Std. 4.5.0.10)	2.56 (1.00)	36
93. Children are always seated while eating. (Std. 4.5.0.10)	2.95 (0.23)	37
Pools, Spas and Hot Tubs		
If the program does not have pools, spas or hot tubs, skip to the Infant/Toddler subscale.		
This facility has the following water hazards: (circle all that apply)		
Swimming Pool Hot Tub Stationary Wading Pool Pond Other _____		
94. Ratios: Ages of children observed: (circle all that apply)	1.50 (2.12)	2
≤12 months, 13–35 months, 3 years, 4–5+ years		
Location _____ Time of Day (h/min): ____/____		
# of children ____ # of staff ____ child/staff ratio: ____:____ (Std. 1.1.1.5)		
95. Exit and entrance points around bodies of water have self-closing, positive latching gates with locking devices that are a minimum of 55 inches from the ground. (Std. 6.3.1.1)	2.67 (0.58)	3
96. When not in use, in-ground and above-ground swimming pools are covered with a safety cover that meets or exceeds the American Society for Testing and Materials (ASTM) International standards. (Std. 6.3.1.4)	1.00 (1.73)	3
97. Each swimming pool more than six feet in width, length, or diameter is provided with a ring buoy and rope, a rescue tube, or a throwing line and a shepherd's hook. (Std. 6.3.2.1)	2.67 (0.58)	3

Table 3 continued

Health and Safety Checklist Subscales and Items	Mean (SD)	# centers
98. Toys and other equipment used in and around the water play area are made of sturdy plastic or metal. No glass is present. (Std. 6.3.1.1, 6.3.1.4)	3.00 (0)	3
99. Children are not permitted in hot tubs, spas, or saunas. Hot tubs, spas, and saunas are secured to prevent any access by children. (Std. 6.3.5.1)	–	0
Infant/toddler		
If the classroom has children under 36 months of age, complete this section of the Checklist.		
Infant/toddler—relationships		
100. Caregivers/Teachers interact within the context of routines like diapering, feeding and eating with infants and toddlers by means of smiling, talking, touching, holding, singing, and playing. (Std. 2.1.2.1)	2.71 (0.62)	24
101. Caregivers/Teachers comfort children who are upset and are attuned to children's feelings. (Std. 2.1.2.1)	2.80 (0.50)	25
Infant—activity		
102. Infants (birth to 12 months of age) have supervised tummy time while awake at least once each day. (Std. 3.1.3.1)	3.00 (0)	12
103. Infants <12 months of age are not seated more than 15 min at a time except during meals. (Std. 3.1.3.1)	2.55 (0.69)	11
Infant—sleep		
104. All infants up to 12 months of age are placed to sleep on their backs, on a firm mattress, with a tightly fitting sheet. Only one infant is placed in each crib. (Std. 3.1.4.1)	2.42 (0.67)	12
105. For infants up to 12 months of age, no soft or loose bedding or objects are accessible including bumpers, pillows, positioners, blankets, quilts, diapers, flat sheets, sheepskins, toys, and stuffed animals. One piece blanket sleepers may be used for warmth. (Std. 3.1.4.1)	1.92 (1.16)	12
106. Room temperature is comfortable for a lightly clothed adult. (Std. 3.1.4.1)	2.89 (0.32)	18
107. If infants fall asleep any place that is not a safe sleep environment, such as a car seat, high chair, or swing, they are moved and placed to sleep on their backs in a crib. (Std. 3.1.4.1)	2.88 (0.35)	8
108. Cribs meet the current guidelines approved by CPSC or ASTM International standards. (Std. 5.4.5.2)	2.92 (0.29)	12
109. Cribs are placed away from window blinds or draperies. (Std. 5.4.5.2)	2.75 (0.45)	12
110. Infants mobile enough to potentially climb out of a crib sleep on cots or mats. (Std. 5.4.5.2)	3.00 (0)	5
Infant/toddler—diapering		
111. Current diaper changing procedures are posted in the changing area(s). (Std. 3.2.1.4)	2.23 (1.31)	26
112. Children are not left unattended on a diaper changing surface. Caregiver/Teacher has one hand on the child at all times. (Std. 3.2.1.4)	2.96 (0.21)	23
113. The diaper changing procedures include the following:	1.36 (0.78)	22
Non-absorbent paper liner, large enough to cover the changing surface from the child's shoulders to beyond the child's feet, is used.		
Clothing is removed or otherwise kept from contact with the contents of the diaper during the change.		
Child is cleaned of stool and urine, front to back, with a fresh wipe for each swipe.		
Soiled diapers placed in a plastic-lined, covered, hands-free can.		
If reusable cloth diapers are used, soiled diaper is put in a plastic bag or into a plastic-lined, hands-free covered can.		
A fresh wipe is used to clean the hands of the child and another fresh wipe to clean the hands of the caregiver before putting on a new diaper and dressing the child.		
The child's hands are washed before returning the child to a supervised area.		
Diaper changing surface is cleaned and disinfected with an EPA registered disinfectant after each diaper change.		
Disinfectant is put away, out of reach of children.		
Caregivers'/Teachers' hand hygiene is performed after diapering procedure is complete. (Std. 3.2.1.4)		
Infant/toddler—injury prevention		
114. Strings, cords, ribbons, ties, and straps long enough to encircle a child's neck are not accessible to children under 3 years of age. (Std. 3.4.6.1)	2.81 (0.63)	26

Table 3 continued

Health and Safety Checklist Subscales and Items	Mean (SD)	# centers
115. The following are not accessible to children under 3 years of age: small objects, toys, and toy parts that have a diameter less than 1¼ inch and a length between 1 inch and 2¼ inches; balls and toys with spherical, egg shaped, or elliptical parts that are smaller than 1¼ inches in diameter; toys with sharp points and edges; plastic bags; styrofoam objects; coins; rubber or latex balloons; safety pins; marbles; magnets; foam blocks, books, or objects; latex gloves; bulletin board tacks or glitter. (Std. 6.4.1.2)	2.73 (0.53)	26
116. Securely installed, effective guards (for example, gates) are at the top and bottom of each open stairway in facilities where infants and toddlers are in care. (Std. 5.1.5.4)	3.00 (0)	2
117. Infants <6 months of age are not in direct sunlight. (Std. 3.4.5.1)	2.89 (0.33)	9
Infant/toddler—nutrition		
118. Bottles or containers with mother's milk are labeled with infant's full name, date, and time the milk was expressed. Only glass bottles or bottles labeled BPA-free and phthalate-free or marked #1, #2, #4, #5 are used. (Stds. 4.3.1.3, 4.3.1.9)	1.50 (1.20)	8
119. Mother's milk is stored in the refrigerator or freezer. Frozen mother's milk is thawed in the refrigerator or in a container of running cool tap water. (Stds. 4.3.1.3, 4.3.1.9)	3.00 (0)	7
120. Bottles of formula prepared from powder or concentrate or ready-to-feed formula are labeled with the child's full name and the time and date of preparation. (Std. 4.3.1.5)	1.27 (1.27)	11
121. If caregivers/teachers choose to warm bottles and infant foods, bottles are warmed under running warm tap water or by placing in a container of water no warmer than 120 F. Bottles and infant foods are not thawed or warmed in microwaves. (Std. 4.3.1.9)	2.17 (1.33)	6
122. Infants are not fed solid foods sooner than 4 months (preferably 6 months). Introductory foods are single ingredient. (Std. 4.3.1.11)	2.89 (0.33)	9
123. Infants who are learning to feed themselves are actively supervised by an adult seated within arm's reach of them at all times while being fed and/or eating. Children over 12 months of age who can feed themselves are actively supervised by an adult who is seated at the same table or within arm's reach of the child's high chair or feeding table. (Std. 4.5.0.6)	2.92 (0.27)	14
124. Foods that are choking hazards are not served to infants or toddlers. Food for infants is served in pieces ¼ inches or smaller. Food for toddlers is served in pieces ½ inches or smaller. (Std. 4.5.0.10)	2.70 (0.47)	20

* An asterick (*) indicates that the Checklist item requires interaction with the director or staff to ask where to find an item or identify products

Table 4 Correlation between environment rating scale and checklist (n = 12 centers)

ERS item/subscale	# Checklist item	Correlation coefficient
Personal Care Routine Items		
Meals and snacks	13	0.01
Nap/rest	7	-0.60
Diapering and Toileting	8	0.27
Health practices	11	0.15
Safety practices	16	0.32
ERS Subscale and Total Score		
ERS Personal Care Routines subscale and Checklist mean	124	-0.05
Total ERS and Checklist mean	124	-0.27

CFOC3 revised in 2011. Based on these findings, it seems that if a center is rated as three or less on the PCR items, the Checklist should be completed for a more detailed health and safety assessment identifying the gaps in meeting *CFOC3* standards.

The revised Checklist kept the literacy level as low as possible while retaining the meaning of the standard to reach a wider group of users, including ECE directors, child care health advocates, program staff, and licensing

inspectors. The revised Checklist and User Manual are available online at www.ucsfchildcarehealth.org, with links to the original *CFOC3* standards included with each item. Future studies are needed to determine the psychometric properties of the revised Checklist.

Although the methodology for the development of the Checklist is scientific and methodical, and the results of the pilot study contributed to the revision of the Checklist and User Manual, there are limitations to this pilot study. The

small convenience sample of 37 ECE centers in the three states and 12 centers where the ERS were completed is not a representative sample, so these results need to be replicated with a larger sample.

Conclusion

This project's findings have the potential to impact and improve the health and safety practices in ECE centers through the use of the accessible, revised Health and Safety Checklist. This Checklist could have great utility in research, evaluation, program quality rating and improvement, monitoring/accreditation activities [37], and the health and safety of children. The majority of epidemiologic and sociologic studies show higher rates of illness for children attending of ECE centers than for children cared for at home [33, 38, 39], yet none of these studies include health and safety assessments of ECE environments. Major factors which contribute to high illness rates are staff and children's hand hygiene and regular sanitizing of children's toys, which are *CFOC3* standards on the Checklist.

The Checklist can be used to provide comparable, standardized data to identify strengths and gaps, and compare practices and conditions across states. In a study where researchers in Indiana and CCHCs in CA completed the CCHP Health and Safety Checklist-Revised, the two states' ratings were significantly different. Indiana rated higher overall than CA [40]. Both states' lowest ratings were for the health practice of handwashing and safety issue of adequate impact-absorbing surfaces under outdoor equipment. The Checklist can be used by health professionals and researchers along with ECE providers, parents, regulators, and policy makers.

The Checklist provides a measure of health and safety as the foundation of quality in an ECE program by assessing a center's ability to meet key, observable national health and safety standards. In a CCHC intervention study in ECE centers in NC, centers with child care health consultation showed improvements in staff hygiene (e.g., hand washing, diaper-changing), playground safety, and nutrition [14]. The Checklist can complement other quality assessment tools which have limited health and safety content. Since parents' top concern about ECE is quality [41], the Checklist can inform parent choices. It can also be used as a self-assessment tool by ECE providers and directors to identify their programs' strengths and weaknesses and as an instrument for state's QRIS.

This revised Checklist supports children's overall health and development in ECE programs. Improvements in health and safety in ECE programs will provide the foundation for high quality ECE programs and support positive health outcomes across children's lifespans [42].

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