13-Indicators of Quality Child Care

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Introduction

Today, the regulations of most child care programs, which include centers and homes, are each State's responsibility. During the first few years of life, research has showed that children's healthy development depends on safe and positive experiences. Researchers have identified 13-indicators of quality child care to consider when evaluating child care programs. As state child care agencies revise their regulations, the purpose of the research is to provide guidance. The *Stepping Stones to Using Caring for Our Children (1997)* has provided a synthesis of literature for the health and safety standards for out-of-home child care.

The Instrument Based Program Monitoring Information System (IPM) and the Indicator Checklist (IC) are two tools for the state management of child day care services. When the *Weighted Licensing Indicator* system was just being developed in Pennsylvania (Fiene & Nixon, 1981), it was a new methodology which seemed like a potential solution for the Federal Interagency Day Care Requirements (FIDCR) standards. The methodology used in this research began to gain attention in the early 1990's by national organizations, which were interested in utilizing it outside the licensing area.

Many years of thorough research has contributed to the development of the 13-indicators along with the possibilities for them to be a basis for the future development of state and national programs. This research clearly documents the importance of the 13-indicators in determining the health and safety of young children in child care and the overall quality of a program to meet the child's needs. The development of a streamlined tool for conducting monitoring reviews has been a lengthy process, which was started in 1979.

Systems

The indicators contain a reduced number of standards from those presented in *Stepping Stones*. These standards have gone through a weighting consensus based on risk factors as well as an indicator methodology that selects standards on the basis of being able to predict overall compliance with standards and positive outcomes for children.

➢Advantages of the Weighted Risk Assessment System:

❖ Identifies regulations that may present the greatest risk to children if they are not met
❖ Provides empirical evidence for making revisions in regulations based upon relative risk factors

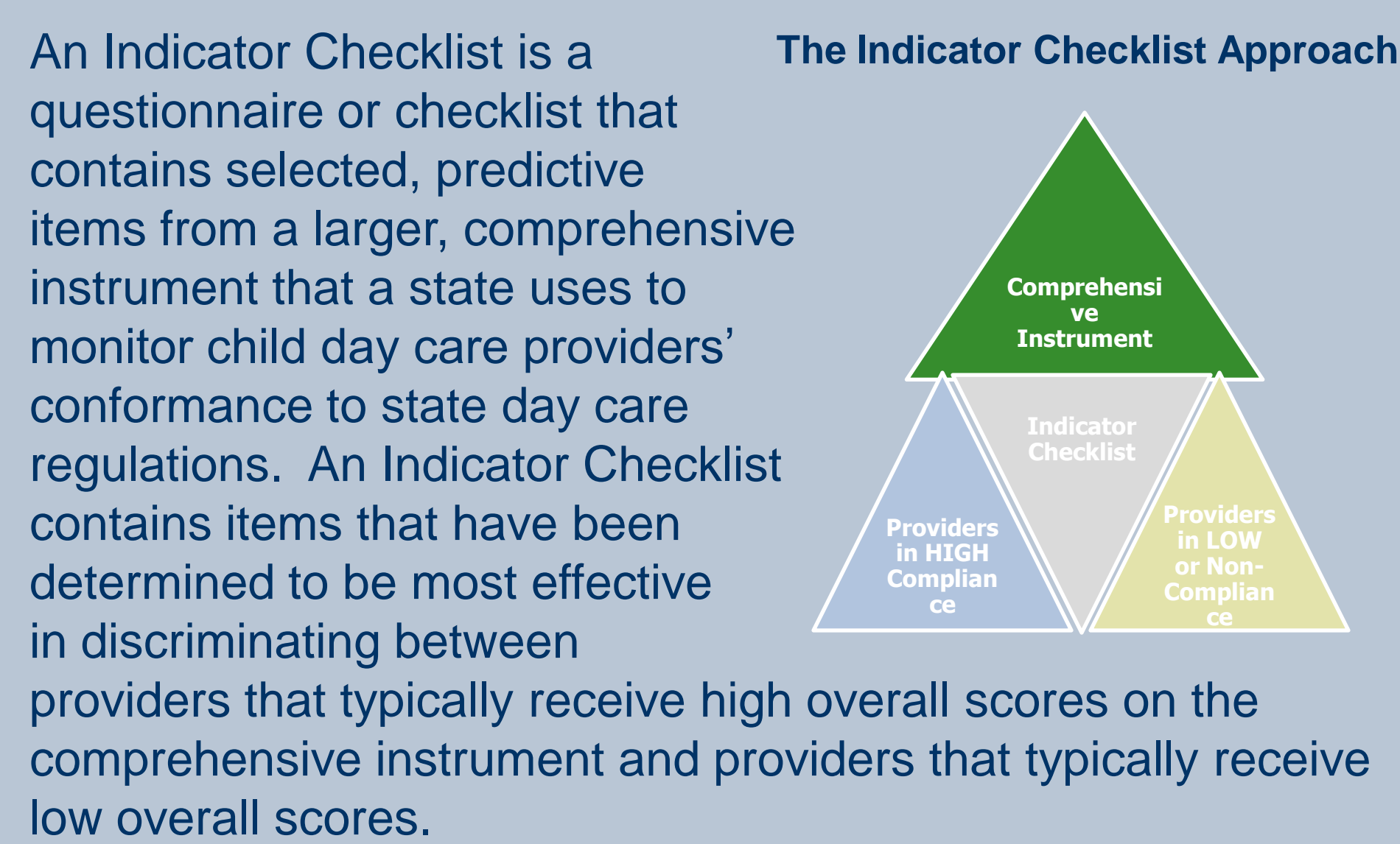➢Advantages of the Indicator Checklist System:

❖ Measure compliance with quality of licensing regulations is maintained
❖ Reduces the system costs
❖ Assist with achieving a balance between the program quality and its compliance
❖ Target the predictor regulations that can be connected to outcomes

Methodology

A Federal demonstration grant was awarded to Pennsylvania to develop a weighted licensing indicator system methodology and to begin pilot testing it in a consortium of States from 1980 through 1985. After 1980 it became clear that the monitoring focus for child care programs was shifting from the Federal government to the States. There are two licensing measurement methodologies, which includes the weighted licensing and the indicator systems (Fiene & Kroh, 2000). The licensing weighting and indicator systems are two licensing measurement tools that have been utilized in the licensing literature for the past 20 years. These two methodologies are part of the *Licensing Curriculum* developed by the National Association for Regulatory Administration. These constitute the most researched tools for conducting inferential inspections by licensing agencies.

The Department of Health and Human Services (HHS) wanted to assist States in their monitoring efforts and thought that the weighted licensing indicator system was an innovative means for going this. During the 1980s and early 1990s, many States utilized this methodology to help streamline their licensing enforcement systems; in 1994, a study by the U.S. General Accounting Office (GAO) estimated that 30 States were using the methodology in one form or another. During this time, a national database was established at the Pennsylvania State University in order to track the various State regulations that constituted respective States' weighted licensing indicator systems. From this data base, 13 key indicators consistently appeared.

An Indicator Checklist is a questionnaire or checklist that contains selected, predictive items from a larger, comprehensive instrument that a state uses to monitor child day care providers' conformance to state day care regulations. An Indicator Checklist contains items that have been determined to be most effective in discriminating between providers that typically receive high overall scores on the comprehensive instrument and providers that typically receive low overall scores.

The Indicator Checklist Approach

Comprehensive Instrument
Indicator Checklist
Providers in HIGH Compliance
Providers in LOW or Non-Compliance

Employing the indicator system methodology, a research brief funded by the Office of the Assistant Secretary for Planning and Evaluation (ASPE) and titled *Thirteen Indicators of Quality Child Care*: Research Update built upon an earlier tool developed by the National Resources Center for Health and Safety in Child Care (NRCHSCC) that focused on those standards that protect children from harm in child care. These standards are also key predictors regarding children's positive outcomes while in child care and are statistical indicators of overall compliance with child care regulations.

The following indicators have gone through a weighting consensus based on risk factors as well as an indicator methodology that selects standards on the bases of being able to predict overall compliance with standards and positive outcomes for children. In some cases, research going back further than the last decade was used because of the classic nature of the studies and their significance to the 13 key indicators. The 13-indicators are as follows: child abuse, immunizations, staff: child ratio and group size, director qualifications, teacher qualifications, staff training, supervision / discipline, fire drills, administration of medication, emergency plan / contact, outdoor playground safety, toxic substances, and hand-washing / diapering.

The 13-Indicators

What can each program do?

1) **Child abuse indicator**
•Inform caregivers of their legal responsibilities, their rights, and protections under the law
•Focus on positive behavior
•Evaluate program with feedback to staff
•Provide sufficient training opportunities
•Increase caregiver support and offer social support
•Parent networking
•Child-rearing advice
•Informal counseling to troubled parents
•Child never alone with one caregiver
•Caregivers gone through a background check and have clearances
•Training for caregivers on how to prevent and see signs of child abuse along with how to report suspected child abuse
•Consumer orientation
2) **Immunizations indicator**
•Reviewing and monitoring child care center records for immunizations
•Assure child is up-to-date on all required immunizations
•Records for all children in the child care program having completed the required immunizations
•Statewide systems
•Early childhood linkage system
3) **Staff: child ratio and group size indicator**
•Improves the behaviors of the staff as caregivers
•Health and safety of children
•Number of children being cared for in the program
•Number of caregivers compared to the number of children
•More secure attachments
•School readiness and mental health
4) **Director qualifications indicator**
•Experienced and educated directors
•Directors appropriately monitor their staff
•Director's understanding of what children need to grow and learn
5) **Teacher qualifications indicator**
•Educated and trained caregivers
•Child care teachers have a bachelor's degree in a child-related field
•Teacher experience and length of working experience in the child care field
•Encourage initiative
•Lessen the engagement in restrictive behavior with teacher direction
•Provide children with the lessons and toys that are age appropriate
6) **Staff training indicator**
•Training built on one another and actively involve the participants in learning
•Mentoring programs
•Train caregivers to keep children healthy and safe from injury and illness
•Conducting first-aid and rescue breathing
•Training to understand and met the needs of children of different ages
•Training to facilitate a positive learning and socialization environment
•All individual's tending to children should be trained on and be able to implement infant back sleeping along with safe sleep policies to reduce the risk of SIDS (Sudden Infant Death Syndrome)
7) **Supervision / discipline indicator**
•The type of discipline the caregivers use toward the children
•Decrease injury rates
•Lessen certain behavioral problems
•Negative effects of verbal reprimands and corporal punishment
•Children being supervised at all times along with when they are sleeping
8) **Fire drills indicator**
•Plan in case of a disaster (i.e. fire, tornado, flood, blizzard, or earthquake)
•Practice drills once per month and fire safety
9) **Administration of medication indicator**
•Written permission of the parent or guardian along with instructions from a physician
•Designated staff to administer medication
•Written policy and clear procedures on giving medicine along with the proper storage
•Medication out of reach from children and proper storage
•Caregivers trained along with any other licensing requirements
•Medication labeled to assure correct child gets the right amount at the correct time
10) **Emergency plan & contact indicator**
•Staff trained in first-aid and CPR and any emergency situations or injuries
•Emergency medical policies and procedures in place
•Critical information on children and staff organized and available
•Accurate information in file along with any necessary paperwork
•Emergency plan if a child is injured, sick, or lost
•First-aid kits in the child care program
•Information on file about who to contact in an emergency

13-Indicators Continued

What can each program do?

11) **Outdoor playground indicator**
•Often playground inspections for safety
•Fence around the playground and resilient playground surfaces
•Assure a clean sandbox
•Safety of playground equipment
•Height of the playground equipment
•Surfaces of the playground checked often for dangerous substances and hazards
•Equipment size and type for the age of children who use it
12) **Toxic substances indicator**
•Staff should know the building materials and products used within the center (i.e. radon, lead, and asbestos)
•Eliminate hazards regularly
•Be familiar with local health department in case assistance is needed
•Assure toxic substances are kept away from children (i.e. cleaning supplies and pest killers)
•Prevention and management of hazards in the child care agency
•Clearly posted poison control information
13) **Hand-washing & diapering indicator**
•Posted hand-washing procedures
•Continuous training about hand-washing procedures
•Caregivers and children wash their hands often (i.e. after changing diapers, before eating, and after using the restroom)
•A clean diaper changing station
•Caregivers keep a hand on the child while diapering
•Sanitization of the surface after finishing the changing process
•Caregivers assure a clean surface before and after changing diapers
•Technical and mentoring assistance in hand-washing procedures

Conclusion

The importance of the 13-indicators in determining the health and safety of young children insures that their child development needs are being met while in child care. The indicators also are important in determining the overall quality of each program. These statistical indicators are key predictors of overall compliance with child care regulations and also with children's positive outcomes while in child care.

This research is a major step forward in support of state child care agencies as they attempt to ascertain which standards are primary to protecting children. One goal is to impact the State's regulations as they are being rewritten for conducting monitoring reviews of child care centers. The 13-indicators have provided a focus and support for protecting children from harm while in child care.

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National Child Care Benchmarks and Public Policy

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Introduction

The concept of having national child care standards or benchmarks has a controversial and long history. For some, it is a major problem because we are the only major industrialized country that does not have national child care standards; for others, they don't want to have the federal government being part of establishing national child care regulations for young children. The premise of this poster is that by default because of the tremendous advocacy work done by the National Association of Child Care Resource and Referral Agencies (NACCRRA) we have evolved to the point through a voluntary approach where we do have national child care benchmarks in place.

Background

This discussion begins back in the 1960's when the federal government started to get into the child care business in a big way. As with any new endeavor that governmental agencies are part of, regulations and standards are not far behind. So in 1968 the **FIDCR – Federal Interagency Day Care Requirements** - were promulgated. These new federal requirements were used to govern all federal child care as these programs started to grow into a national program. In the late 1970's a large federal study was undertaken to look at the appropriateness of the FIDCR. This study looked at not only the FIDCR's content but also its monitoring capability. How would the federal government monitor and enforce the FIDCR in all child care programs that were now growing to be a very large national program. There needed to be a more efficient and effective approach to monitoring and enforcement. In their search for such an approach, two researchers in Pennsylvania, Susan Aronson, a pediatrician with a strong interest in child care, and Richard Fiene, a child psychologist with a strong interest in child care public policy research had developed an innovative **Child Development Program Evaluation (CDPE)**(Aronson, Fiene, & Douglas, 1977) system that looked like a promising monitoring and enforcement system.

The only problem with the new CDPE system was that it was very labor intensive and time consuming to administer. In discussions between Aronson & Fiene and the Federal HEW Children's Bureau, a proposal was made that a **key indicator approach might be a useful methodology.** An analogy would be similar to the 1040 IRS form and the 1040EZ form where the 1040EZ form used a key indicator approach. The team of Aronson & Fiene developed such a system in 1979 and presented it to the Children's Bureau, who became excited about piloting it nationally. Unfortunately, in 1980, a moratorium was placed on the FIDCR and over the next several years the focus of regulations moved from the national or federal level to the individual state levels.

Methodology

The federal government started to support state agencies in helping them to improve their respective child care monitoring systems and a group of five states, Pennsylvania (as lead), California, West Virginia, Michigan, and New York received a grant to develop this system. The group of five states called themselves the **Children's Services Monitoring Transfer Consortium (CSMTC)** and started to look at Pennsylvania's CDPE system. The focus of the CSMTC was to take the CDPE system and make it a more generic system that could be used by all 5 states and in the remaining 45 states for monitoring their child care systems. The result was two systems called the **Instrument Based Program Monitoring System (IPM)** (Fiene & Nixon, 1981) **and the Indicator Checklist System (ICS)** **(**Fiene & Nixon, 1983). The IPM and ICS systems were pilot tested in the five states and the results compared to see if there were similarities in the results obtained. There were similarities and a combined data base was begun of the five states and a **Generic Child Care Indicator Checklist** was developed (Fiene & Nixon, 1985). Based upon these findings and publications, other states began to use the IPM and ICS systems in their respective states and by 1989 approximately 30 states were using the methodology or tools or systems (GAO, 1989). What was appealing to states was the simple and straightforward approach of the IPM and ICS systems. Also, what was occurring were the identification of a small group of key licensing child care indicators that could be used by all states as they developed their respective child care regulatory systems.

In 1987, a study was conducted in Pennsylvania utilizing the CDPE (IPM) (Fiene, 1984a), CDPE-ICS (Fiene, 1984b), ECERS – Early Childhood Environment Rating Scale (Harms & Clifford, 1980) and looked at **child development outcomes** in a small group of child care programs mainly in the Northeastern part of the state. Based upon this study, a clear relationship was developed between scores on the **CDPE-ICS** (Fiene, 1984b) and how well children were doing in the respective programs (Kontos & Fiene, 1987). This study showed that by utilizing the ICS approach it could pay huge dividends for states in how they monitored their child care delivery systems. Here was a cost effective and efficient methodology that produced positive outcomes for children.

By the early 1990's a federal grant obtained by **Zero to Three** and three states, Utah, Florida and Illinois were to take the **IPM/ICS methodologies** and to expand them into a **comprehensive child care program quality model** involving training, technical assistance, monitoring, program evaluation, resource and referral, and parent education (Griffin & Fiene, 1995). This new comprehensive child care program quality model became the **precursor to the development of the Quality Rating Systems** that are very popular with states today.
Two other developments during the 1990's involved the use of the ICS methodology. The first involved the National Child Care Association, which began **a new accreditation system based upon the ICS approach.** This new system was studied extensively between 1991 till 1994 and the results of this study were published by NAEYC in a monograph on child care accreditation (Fiene, 1996).

Methodology

The second involved the American Academy of Pediatrics (AAP) and the American Public Health Associate (APHA), when they jointly published a voluntary set of health and safety guidelines, **Caring for Our Children** (AAP/APHA, 1992). Because of their comprehensive nature and the great length of the standards, a shorter version utilizing the ICS methodology was proposed and created called **Stepping Stones** (AAP/APHA, 1995) to assist states as they revised their child care regulations.

Results

In the late 1990's and early 2000's, the National Center for Health and Safety in Child Care (NCHSCC) and the Assistant Secretary's Office for Program Evaluation (ASPE) were interested in documenting the research behind the key indicators that formed the basis of *Stepping Stones*. In **2002, the publication, *13 Indicators of Child Care Quality, A Research Update* (Fiene, 2002) was published by ASPE/NCHSCC. This comprehensive publication documented all the research to support the ICS key indicator approach in child care. It depicted how the 13 indicators were supported by the past 20 years of child care research that had been taking place in the field. A parent guide quickly followed.

After publication of the *13 Indicators of Child Care Quality*, the National Association for Child Care Resource and Referral (NACCRRA) adopted this research publication and parent guide as their default research standards when publishing their various guides and reports. NACCRRA published their own parents' guide based upon the 13 indicators and then in **2007 and 2009 published a very influential *Report Card on Child Care Quality - We Can Do Better: NACCRRA's Ranking of State Child Care Center Standards and Oversight** at the state level.** NACCRRA has also produced a companion Report Card for family child care as well, *Leaving Children to Chance: NACCRRA's Ranking of State Standards and Oversight in Small Family Child Care Homes* (2008).

The 13 indicators are include:
1) **prevention of child abuse,**
2) **immunizations,**
3) **staff child ratio,**
4) **group size,**
5) **staff qualifications,**
6) **staff training,**
7) **supervision/discipline,**
8) **fire drills,**
9) **medication administration,**
10) **emergency plan/contact,**
11) **outdoor playground,**
12) **inaccessibility of toxic substances, and**
13) **proper hand washing/diapering** (Fiene, 2002, 2003).

Conclusion

These 13 indicators have become by default national child care standards because of the advocacy and research work of NACCRRA. By publishing the **Child Care Report Cards in 2007 and 2009, NACCRRA** has helped states to focus on the key regulatory items that should be in place in their respective child care delivery systems. NACCRRA plans on publishing their 2011 update in March 2011. Because of NACCRRA groundbreaking work, we are at a tipping point in which national child care benchmarks are a reality for states. It is not intended to become a heavy handed approach established by the federal government but rather as guidance for states as they further develop their individual state child care standards as outlined in the NACCRRA Report Card Reports for child care centers and family child care homes. The 13 indicators are not perfect, but they are based upon empirical evidence over a 30-year period that provides the individuals within child care field a beginning point. The 13 indicators are readily measureable, and easily explainable to parents on why they are important to ensure the health and safety of their children while in out-of-home child care.

Future

As NACCRRA has suggested in their Report Card Reports, let us move from an overly burdensome, complicated, confusing system to one that embraces a simple first step to establishing a baseline to program quality through these 13 key child care indicators. Originally the design of the licensing indicator methodology in 1979 was developed with a purpose to streamline a cumbersome, complicated, difficult child care licensing and monitoring process to a more simple, efficient and effective system. One in which there was a balance between child care licensing and program quality indicators. It was never intended that it be the end all too improving quality, but a **first step for the federal government and state governments to begin the quest for child care improvement**.

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Child Care Quality, Children's Development, and Compliance with Regulations

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Introduction

The only public policy designed to maintain quality control in child care consists of each state's licensing regulations. It is assumed that when child care programs comply with licensing regulations, they meet a level of quality that will, at the very least, not be harmful to the development of young children (Fiene & Nixon, 1981). Variation in regulatable characteristics of child care is related to differences in children's intellectual, language, and social development or experiences. Little research has been done to determine how regulatable aspects of child care (those aspects of quality that enter into licensing criteria) relate to measures of quality determined by standards of the child care profession. Specific information is needed regarding how much children's development is influenced by differences in regulatable characteristics of child care after all other relevant variables have been taken into account. Information of this nature will help determine which regulatable characteristics of centers are most critical to quality as it is defined by professional criteria and observed in child development outcomes.

A unique opportunity to obtain data arose in the state of Pennsylvania, where the Office of Children, Youth and Families (OCYF) was wrestling with several related licensing issues. Pennsylvania implemented an instrument-based program monitoring system to determine the level of center compliance to licensing regulations. The average center in the state was in compliance with 97% of the regulations (Fiene, 1980). Most centers, therefore, met the basic floor of quality.

In Pennsylvania, child care centers are required to apply to and be accepted by the state as licensed vendors of subsidized child care slots. The state had no way to objectively discriminate among the quality of services provided by centers. Thus, OCYF sought data to help pinpoint key quality indicators from individual regulatable center characteristics by determining how well these characteristics predict child development outcomes, licensing compliance scores, and an environment quality score as defined by early childhood professionals. This study was conducted in collaboration with OCYF because they planned to formulate this data into public policy pertaining to child care regulations and funding.

Methods

Of the 40 centers selected as representative of the 350 centers in the northeast region of Pennsylvania, only 25 randomly selected centers volunteered while 10 centers actually participated in this study. The random sample of 10 participating centers consisted of 5 urban/non-profit, 3 urban/profit, one rural/non-profit, and one rural/profit. Child care directors provided a list of all 3, 4, and 5-year-old children who had attended the center full-time (more than 20 hours per week) for at least six months. These 100 randomly selected children were divided by gender (53 males and 47 females), and were from all socioeconomic levels. Compliance with licensing regulations in Pennsylvania is monitored through an instrument-based system.

The Child Development Program Evaluation (CDPE) is comprised of the following seven subscales: program administration, environmental safety, child development program and curriculum health, nutrition, parent involvement, and transportation. Each item on the CDPE was empirically given a weight (translated into points) based on ratings of the level of risk to children's health and safety if the center is out of compliance (see Fiene & Nixon, 1981).

The second measure of quality involving compliance to licensing regulations was the percent of items passed on the CDPE Indicator Checklist (CDPE-IC). The CDPE-IC is a 15-item scale comprised of the best predictors of the total score from the full scale (Fiene & Nixon, 1985). The Early Childhood Environment Rating Scale (ECERS) (Harms & Clifford, 1980) was administered at each center by one of the three-member research team. The items focus on seven areas of quality (personal care routines, furnishings and display, language and reasoning experiences, creative activities, fine and gross motor activities, social development, adult needs).

Methods

Seven center characteristics – one process variable and six structural variables – were individually measured: staff turnover, center capacity, staff-child ratio, group size, director's experience, average staff experience, and proportion of staff with 4-year degrees.

A standardized telephone interview was used to obtain family background information and characteristics of the family from the mother. A team of three researchers visited each center for one day to obtain the ECERS scores and administer to children the Slosson Intelligence Test and the TELD. Children's primary caregivers were given instructions for completing the rating scales.

Results

Table 1: Means Standard Deviations, and Ranges for Each Variable

Variable	Mean	SD	Range
Age of child (months)	52.80	8.66	36-70
Family background:			
Mother's education (years)	13.07	2.74	4-21
Value for pro-social (score)	10.28	2.24	5-14
Child care experience:			
Age at child care entry (months)	24.98	14.64	1-60
Time in care (hours)	4084.43	2097.14	270-9360
Center quality:			
ECERS	139.62	21.59	111-176
CDPE-IC (%)	88.94	7.03	80-100
CDPE	34.00	39.48	-51-100
COFAS	67.97	10.54	54-87
Center characteristics:			
Turnover (%)	27.88	19.99	0-70
Capacity	66.16	33.33	20-127
Group size	22.85	6.67	15-39
Ratio	9.81	2.06	6-15
Director's experience (years)	8.09	3.88	2-14
Average staff experience (years)	6.51	3.88	24-145
4-year degree (%)	49.00	56.00	0-100
Child development outcomes:			
Slosson	112.47	16.84	71-150
CBI-Int	52.83	18.34	-5-91
TELD	101.72	13.07	67-130
ALI	60.29	11.41	33-90
PBQ	15.91	9.60	0-38
CBI-Soc	31.89	14.48	2-67

Results

Table 1 presents means, standard deviations, and ranges for each variable included in the analyses. According to scores on the full CDPE, only six centers qualified to be fully licensed, three could be provisionally licensed, and one would be denied a license. Out of the seven individual center characteristics, four predicted caregiver behavior (COFAS) and two the total CDPE, and three ECERS.

The individual center characteristics were most strongly related to caregiver behavior both in number and strength of correlations. Capacity, group size, and ratio were the structural characteristics most consistently related to any aspect of quality. Interestingly, and contrary to findings in other studies, group size was positively related to quality.

The contribution of variations in center quality and characteristics to children's development was measured in two ways. Center characteristics and quality measures most consistently predicted language development as measured by the TELD.

The correlations were confounded with children's ages, family background, and child care experience. The subsequent set of analyses attempted to control for the effects of these variables in order to obtain a clearer picture of how children's development is affected by individual center characteristics and center quality. Capacity, group size, and ratio were the structural characteristics most consistently related to any aspect of quality.

Table 2: Correlations of Center Characteristics and Quality Measures with Child Development Outcomes Measures

	Child development outcomes (n=100)					
	Intellectual		Language		Social	
	Slosson	CBI-Int	TELD	ALI	PBQ	CBI-Soc
Characteristics:						
Turnover	-.12	.04	-.06	.10	.16	.13
Capacity	.02	-.17	.11	-.05	.25*	-.06
Group size	-.21*	-.02	-.22*	.02	-.06	.07
Ratio	-.005	-.08	.06	-.02	.12	.12
Director's experience	-.23*	.02	-.33*	-.06	-.003	-.20*
Average staff experience	-.09	.10	-.20*	.05	-.09	.006
4-year degree	.16	.06	.18	.09	.14	.14
Quality:						
ECERS	-.20*	.03	-.21*	.07	.02	-.04
CDPE-IC	-.003	.01	-.02	.03	-.39*	.21*
CDPE	.16	.03	.20*	.08	-.18	.10
COFAS	.14	-.05	-.22*	-.03	-.02	-.22*

Table 3: Proportion of Variance Accounting for Child Development Outcomes by Clusters of Center Characteristics

	Slosson		CBI - Int		TELD		ALI		PBQ		CBI - Soc	
	Step 4	Step 5	Step 4	Step 5	Step 4	Step 5	Step 4	Step 5	Step 4	Step 5	Step 4	Step 5
Turnover - Capacity	.035	.027	.023	.028	.036	.034	.008	.011	.091	.091	.014	.014
Ratio - Group size	.065	.064	.024	.025	.051	.049	.005	.006	.047	.048	.013	.012
Group size - Director's experience	.031	.023	.01	.009	.054	.055	.002	.002	.023	.024	.025	.024
Group size - Average staff experience	.043	.035	.082	.083	.038	.037	.044	.045	.066	.066	.037	.038
Group size - 4-year degree	.051	.043	.01	.009	.056	.056	.011	.011	.022	.023	.04	.039
Director's experience - Average staff experience	.047	.046	.109	.109	.039	.038	.109	.109	.057	.062	.162*	.164*
Average staff experience - 4-year degree	.074	.069	.13	.129	.033	.031	.081	.081	.055	.058	.084	.087
Group size - Director's experience – Average staff experience	.066	.058	.111	.112	.068	.064	.112	.113	.073	.074	.188*	.189*
Group size - Average staff experience - 4-year degree	.085	.077	.136	.135	.057	.056	.085	.085	.066	.061	.112	.112

*p<.05

Results

Table 3 shows the proportion of variance accounted for by clusters of center characteristics entered at step 4, without ECERS, and at step 5, after ECERS. These results revealed two statistically significant effects, both of them involving the sociability subtest of the Classroom Behavior Inventory – Preschool. Two statistically significant effects would be expected solely due to chance. Director experience and average staff experience together contributed 16.2 to 16.4% of the variance for sociability. Seven additional effects of greater than 10% approached significance. Four of these involved the intellectual functioning subtest of the Classroom Behavior Inventory – Preschool and two involved the Adaptive Language Inventory.

In general, clusters of center characteristics had the strongest effects (>10% of the variance accounted for) on the intellectual functioning and sociability subtests of the Classroom Behavior Inventory – Preschool and on the Adaptive Language Inventory, all teacher rating scales.

Discussion

The results suggest that family background is the most salient determinant of development in children attending day care centers whose quality varies from adequate to good. The strength of family background as a predictor in and of itself ought not to come as a total surprise. These results are consistent with a major study of public school quality and children's cognitive development and educational attainment (Jencks, 1972). In that study family background explained half of the variance in children's educational attainment while school quality added little or nothing to predictions of cognitive development or educational attainment.

The implication may be that when child care quality ranges from adequate to good the differential effects of quality are nonexistent. When the lower range of quality drops below adequate, the differential effects may become salient due to detrimental effects of low quality care on children's development. This is not consistent with Vandell and Powers's (1983) data that showed medium quality centers were more like low quality than high quality centers. They were using floor of quality measures and not professional standards. Being at a moderate level with respect to the floor of quality may indeed have different implications for children's development than being moderate in quality using professional standards.

Looking at the individual center characteristics in isolation, we found that capacity, group size, and ratio were most frequently related to quality regardless of how it was measured. Contrary to the results of the National Day Care Study (Ruopp, 1979), group size was positively related to quality. On the other hand, the negative relationship between caregiver child ratio and quality is consistent with the National Day Care Study finding. Consistent with the findings of Howes and Rubenstein (1985) and Vandell and Powers (1983), staff characteristics (turnover, ratio, director's experience, and average staff experience) predicted caregiver behavior (as measured by the COFAS).

The results clearly show that individual center characteristics were much more powerful as predictors of children's development when they were treated in clusters. The clusters of characteristics explained more than 10% of the variance in several measures of development and in two instances explained between 15 to 20% of the variance. The latter two were statistically significant predictors. The typical range of regulated center characteristics in Pennsylvania or any other state is unknown. Another line of reasoning suggests that researchers have yet to determine at what point an effect can be said to have a substantive impact on development, even when it is statistically significant. With the added perspective of previous research, one thing that these data tell us is how far we have to go in understanding how variations in child care environments affect children's development. Each state has variations in licensing regulations and monitoring, demographic variables related to families and communities. This study contributes to the knowledge base by showing how, within the confines of the measures used and the sample of families and centers, family background contributes more to variation in children's development than center quality or individual center characteristics.

Pennsylvania Early Childhood Quality Settings

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Introduction

The first five years of a child's life is a period of incredible cognitive, emotional and social growth. During the early years, experiences can set children on pathways that have lifelong social, emotional, and academic consequences. Under the commission from the Governor's Office, the Penn State University initiated the Pennsylvania Early Childhood Quality Settings Study, one designed to collect information from early care and education facilities across the state. There have been a series of studies completed from the Universities Children's Policy Collaborative (UCPC). The UCPC is composed of three major Pennsylvania Universities (Penn State University, University of Pittsburgh, and Temple University) under the direction of the Governor in 2002.

The purpose of the early childhood quality settings study was to determine the quality of care provided in child care centers, preschool/nursery schools, Head Start, family child care homes, group child care homes, and legally unregulated/relative/neighbor care in Pennsylvania. Three program quality tools were used: Early Childhood Environment Rating Scale – Revised (ECERS-R), Family Day Care Rating Scale (FDCRS), and the Caregivers Interaction Scale (CIS). The ECERS-R and FDCRS scales have been used in several major child care and early childhood studies over the past 20 years (Cryer, 1999; Galinsky, etal, 1994; Helburn & Howes, 1996; Iutcovich, Fiene, Koppel, Johnson, & Langan, 1996; Jaeger & Funk, 2001). The ECERS-R and FDCRS are the most reliable program quality instruments available and by depicting the key indicators the high and low quality of programs was measured. The behavior and interactions of the caregivers were observed and scored on the CIS.

This study was accomplished by drawing a stratified random sample of 372 sites from across Pennsylvania. The reason for this study is to establish a baseline measure of the quality of care and education. By establishing a baseline, the impact that specific policy interventions have on the overall child care delivery system can be determined along with being instrumental to improvements in the *Keystone Stars* program. The quality of early childhood services varies greatly from home to centers and by form of sponsorship. Many children are cared for informally by adults who are not registered or licensed by the state, because they take on three or fewer children who are not their own. The number of Pennsylvania children in non-parental, non-regulated care is not known.

Methods

Data were collected from 50 Head Start programs, 48 preschools/nursery schools, 111 child care centers, 46 group child care homes, 109 family child care homes, and 8 legally unregulated/relative/neighbor care providers for a total of 372 sites. The 372 providers selected for this study were from a total pool of 758 sites. In total, 31% of the early care and education programs contacted agreed to participate. A large percentage of the home based providers (80%) declined participation in the study. The neighbor/relative care was under-sampled because of significant difficulty encountered in obtaining this sample with the home-based providers along with the 97% of providers who refused to participate in the study.

The instruments used in this study were:

❖ **The Early Childhood Environment Rating Scale, Revised Edition (ECERS-R)** (Harms, Clifford, & Cryer, 1998) for all Head Start centers, nursery schools, and child care center, which consisted of 43 items organized into 7 subscales; space and furnishings, personal care routines, language reasoning, activities, interactions, program structure, parents and staff.

❖ **The Family Day Care Rating Scale (FDCRS)** (Harms & Clifford, 1989) for all legally unregulated/relative/neighbor care providers, group day care homes, and family child care homes, which consisted of 40 items and included 3 items with separate criteria for infant/toddlers and preschool age children, organized into 7 subscales; space and furnishing for care and learning, basic care, language and reasoning, learning activities, social development, adult needs, provisions for exceptional children. The ECERS-R and FDCRS ratings were: poor=1; minimal=3; good=5; and excellent=7. A comparison could be made between the ECERS-R and FDCRS because the average scores were used for analysis rather than the raw scores.

❖ **The Caregiver Interaction Scale (CIS or the Arnett Caregiver Interaction Scale)** (Arnett, 1989) for each caregiver in the sample as a measure of caregiver interactions with the children, which were divided into 4 subscales; permissive, sensitivity, detached, harshness/sensitivity. The CIS instrument provides an observation of the behavior of caregivers in their interactions with children.

This study primarily focused on preschool age children and did not include observations of quality in infant-toddler settings; however, in home-based care settings, infants, toddlers, and preschoolers were sometimes present. In the center-based programs, only one randomly selected classroom was observed in each Head Start, preschool/nursery program, or child care center. The sampling design was to observe an adequate number of each type to be able to benchmark quality within each provider type, and not to reflect the number of providers of each type nor the distribution of children across these types of care.

Results

Those providers who have the higher stringent standards, which include Head Start for centers and group child care homes for homes, are scoring higher on the ECERS-R/FDCRS scales.

Major Findings:

➢ Head Start's quality was significantly higher than all other forms of early care and education. Head Start was the only program service type that scored 4.0 or above on all the subscales, which includes space and furnishings (4.3) personal care routines (4.8), language –reasoning (5.4), activities (4.3), interaction (5.7), program structure (5.7), and parents (5.8).
  ▪ Preschools/nursery schools had the second highest scores ranging from 3.5 on Personal Care to 5.5 on Interactions. On four of the subscales, preschools were significantly lower than Head Start programs.
  ▪ All subscale scores for child care centers were significantly lower than were those of Head Start. Five of the seven subscales were significantly lower than preschool programs.
➢ Home-based providers (group child care homes, family child care homes, and relative/neighbor care) on average had significantly lower quality scores than center-based providers (Figure 1).
  ▪ On the CIS findings Head Start scored (3.8) the highest on this scale but did not score significantly higher than preschool/nursery schools (3.7). Preschool/nursery school (3.7) programs scored higher than child care centers (3.4) on the CIS results.
➢ The majority of care was minimal or adequate at best with the exception of Head Start. Over 80% of the program scored at a minimal or adequate level (Figure 3).
➢ Providers/Teachers with a college degree provided higher quality care (Figure 4).
➢ Early childhood majors has higher quality ECER-R scores than the teachers whose major was elementary education.
➢ Providers and teachers with graduate degrees are more open to different experiences for children and their individual needs.
➢ Curriculum use was related to higher quality scores.
➢ Using a curriculum in family child care homes showed a significant relationship to quality.
➢ Providers with more education and utilizing a curriculum provide a higher level of quality in their programs.
➢ The overall environmental quality of Pennsylvania child care centers and family/group child care homes has decreased from the mid 1990's.
➢ A clear direction for additional training would be to improve overall staff qualifications as well as focus on the specific ECERS-R/FDCRS items that were at a minimal level.

On the ECERS-R:

❖ Room arrangement and child related displays
❖ Gross motor play and equipment
❖ Personal care routines, including meals/snacks, naps for children, safety practices, toileting/diapering
❖ Learning activities, such as art, music and movement, blocks, sand/water activities, dramatic play, nature/science, math/number, use of television, and promoting acceptance of diversity
❖ Provisions for personal needs of staff

On the FDCRS:

❖ Child related displays and active physical play
❖ Space for infant and toddlers to be alone
❖ Basic care routines such as diapering and toileting, meals and snacks, personal grooming
❖ Health and safety
❖ Learning activities, the following should be addressed: helping infants and toddlers understand language, helping children to reason, art, sand and water play, blocks, use of television, and cultural awareness

These results cannot be described as the average quality of care Pennsylvania children receive, because many more children are in some of the types of care, such as child care centers, than are in others.

Figure 1 shows the sample characteristics of the 2002 Pennsylvania Early Care and Education facilities that were utilized in this study along with the number of refusals by provider type. The center-based programs (Head Start, preschool/nursery schools, and child care centers) had a much lower number of refusals than the homes (group child care homes, family child care homes, legally unregulated/relative/neighbor care), probably because they are more accustomed to having licensing staff visit and conduct annual inspections. Child care centers had a very low refusal rate.

Figure 2 provides the relative quality distribution of ECERS-R and FDCRS scores for the total 2002 sample. The scoring distribution was very similar to other studies completed nationally (Galinsky, etal, 1994; Helburn & Howes, 1996). It is a major concern that less than 20% of providers were considered of good quality (5.0+) and that approximately 50% of providers were of minimal quality (less than a 4.0).
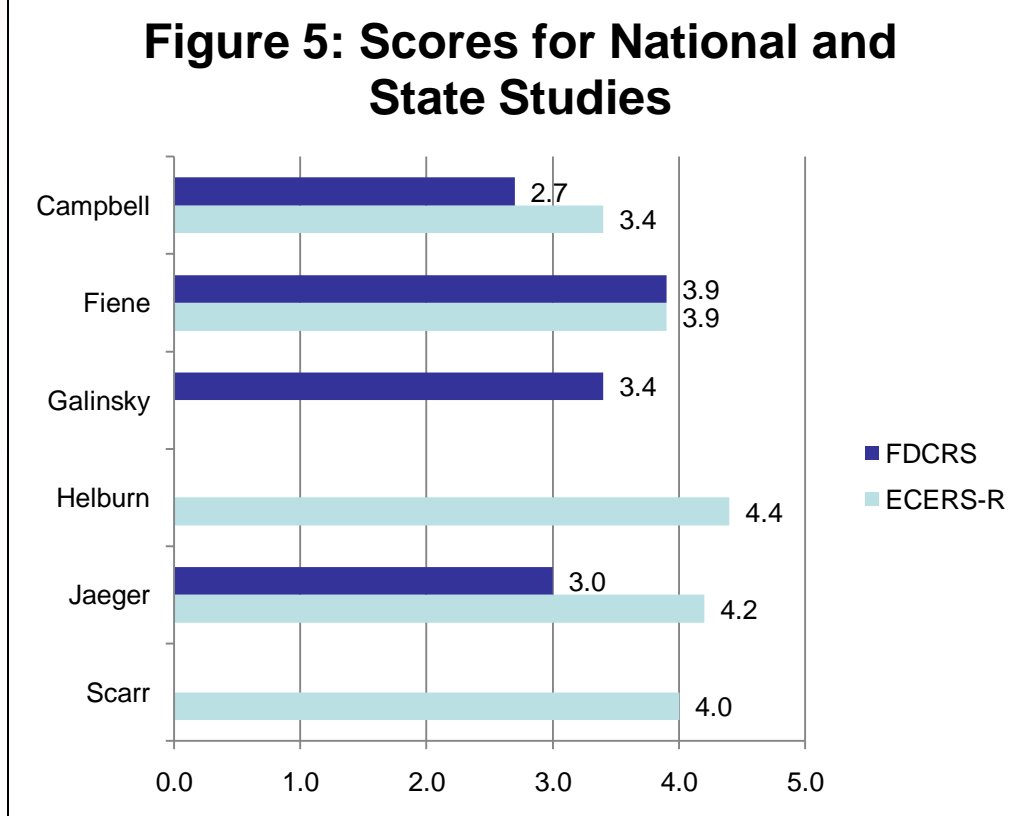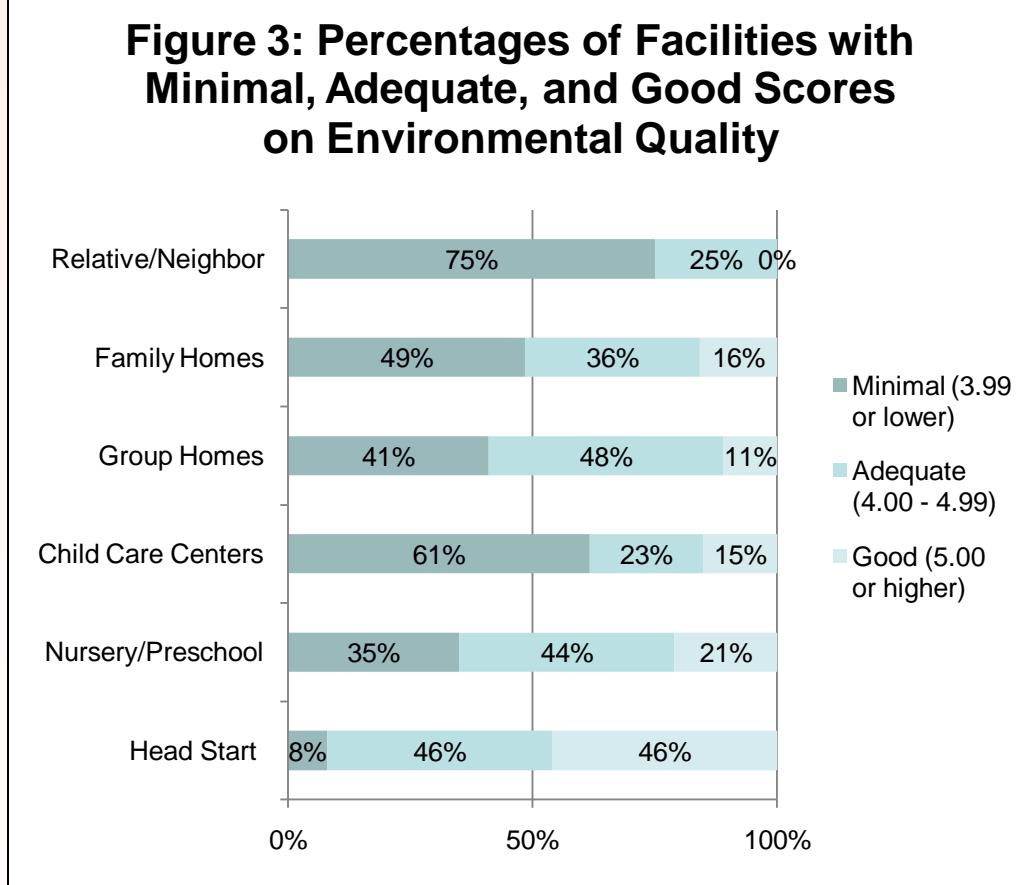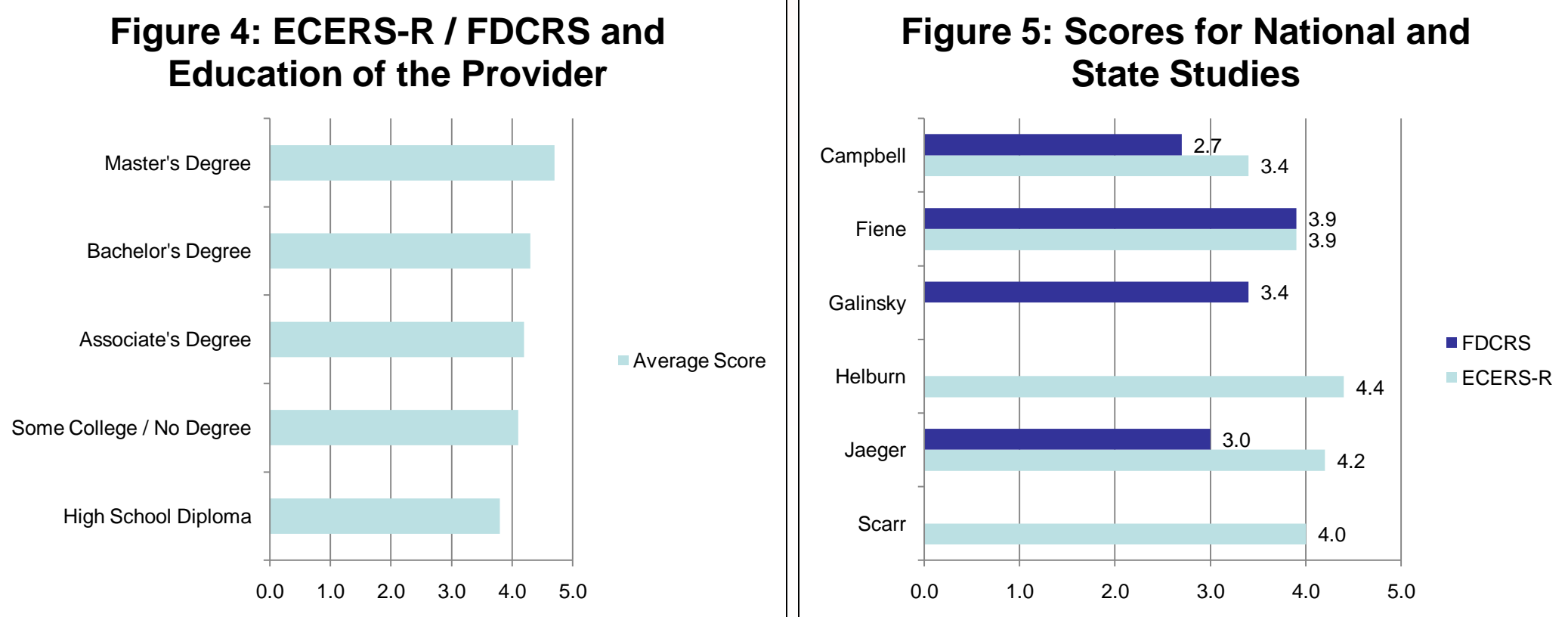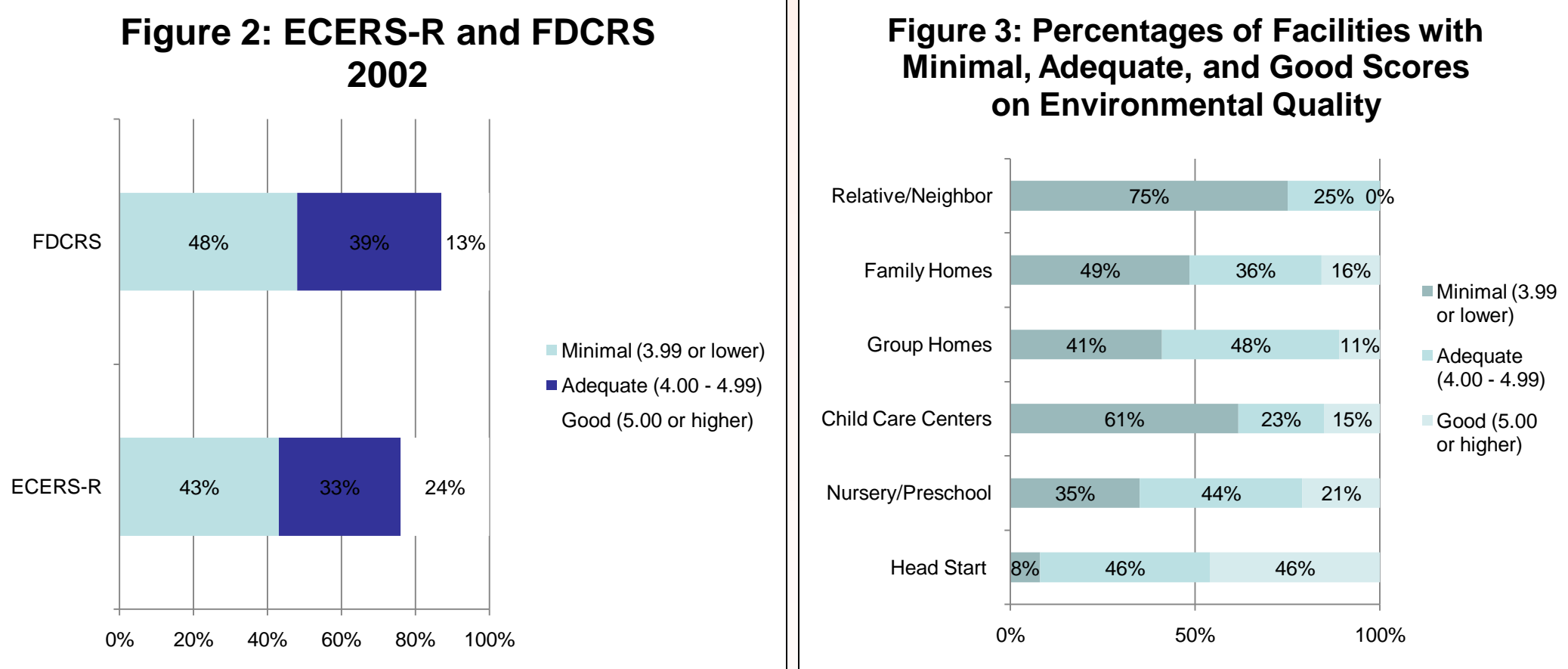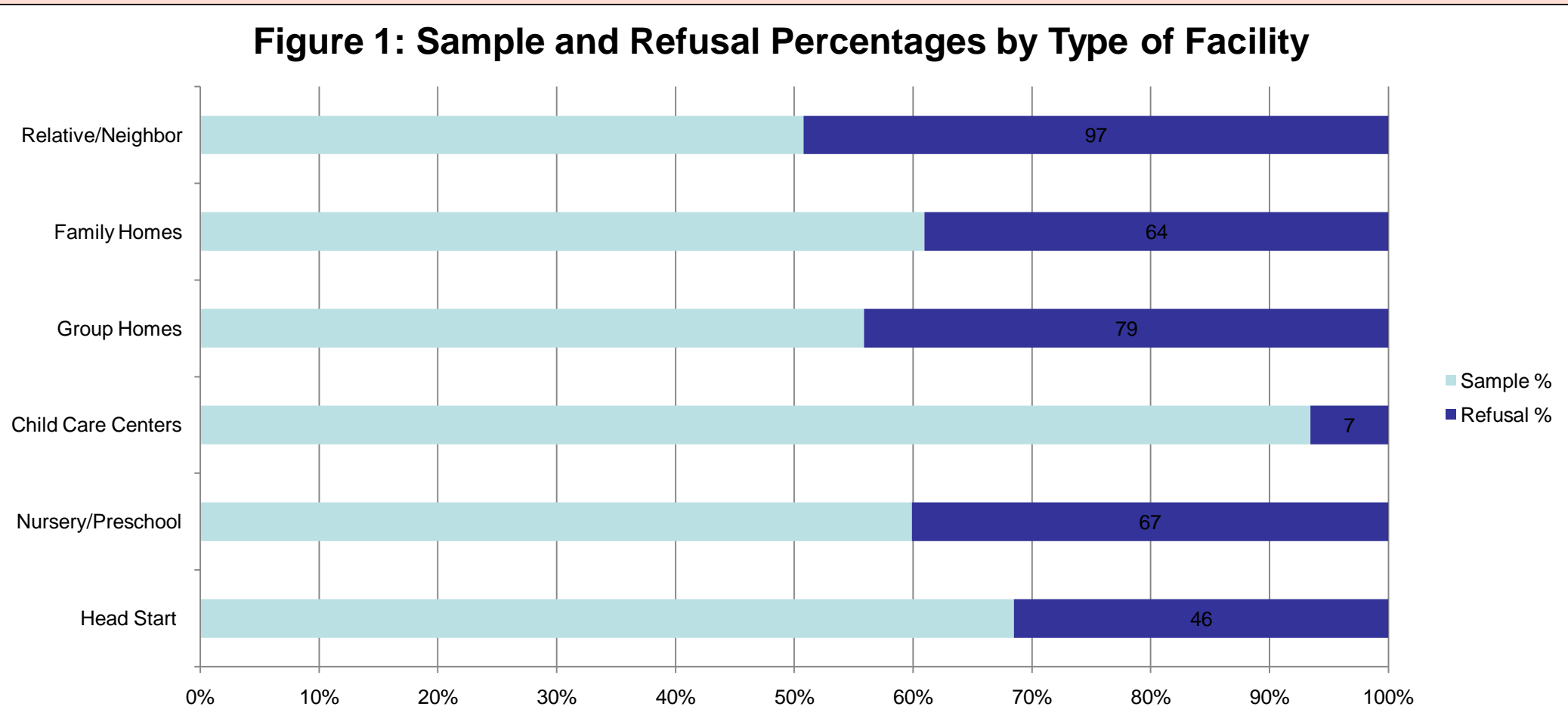
Results

Figure 3 details facilities on level of quality by type of program. Well over a majority of child care center programs (61%) scored at the minimal (4.0 or below), and only 15% scored at a good level (5.0 or above). In contrast, only 8% of Head Start programs scored in the minimal range, and a large portion (close to half – 46%) of Head Start programs scored at the good level.

Figure 4 indicates individuals having a graduate degree on the average had programs that scored higher on the ECERS-R/FDCRS (this difference is statistically significant: F=4.8, p<.001). Those individuals who had a high school diploma (n=87) did not score as well on the ECERS-R/FDCRS (see Figure 4). Those individuals with a Bachelor's degree (n=112) scored significantly higher than those with a high school diploma (t=2.46, p<.02). Those with a Master's degree (n=14) did not score significantly higher than those with a Bachelor's degree, but did score significantly higher than those with an Associate's degree (t=2.1, p<.05).

Comparison

These results when compared to two similar statewide child care studies (Melnick and Fiene, 1990; Iutcovich, Fiene, Johnson, Koppel, & Langan, 1997) completed in 1990 and 1996 show interesting results. Both previous studies are very similar to this study because of utilizing statewide sampling with child care centers and family child care homes. The previous studies were not as comprehensive as they did not examine Head Start or preschool/nursery school programs.

The results indicate that the overall environmental quality of care in both center-based and home-based care has dropped after early improvements that had been made between 1990 and 1996. Gains made in the six-year period from 1990-1996 have been reversed in the subsequent time period from 1996-2002. Similar results from an infant child care study (Fiene, 2000) also supported this drop off in child care quality. However, in 2002 there were no comparative data available measuring qualities from 1996 for Head Start programs.

Figure 1: Sample and Refusal Percentages by Type of Facility

Figure 2: ECERS-R and FDCRS 2002

Figure 3: Percentages of Facilities with Minimal, Adequate, and Good Scores on Environmental Quality

Figure 4: ECERS-R / FDCRS and Education of the Provider

Figure 5: Scores for National and State Studies

Comparison

Figure 5 graphically compares this study with several National and State studies. All of the following studies are significant National and State studies similar to this study (Fiene, etal) that are excellent reference points to put results into perspective:
✓ Campbell & Milbourne, 2001
✓ Fiene, etal, 2000, 2002
✓ Galinsky, 1994
✓ Helburn, 1995
✓ Jaeger & Funk, 2002
✓ Scarr, Eisenberg, & Deater-Deckard, 1994

In both the ECERS-R and the FDCRS, Fiene is the only author who has a significant score of 3.9 in both scales (see Figure 5). The goal is to obtain an average score of 5.0, which is within the good range on both scales.

In summary, the results from this study do not compare favorably with previous statewide Pennsylvania studies of child care quality. When compared to other more recent national, state, and regional studies completed measuring early childhood quality, the results from this study are somewhere in-between what other studies have found and with home-based studies the results are somewhat higher.

Conclusion

The overall scores of most early care and education programs were at a minimal or adequate level. Eighty percent of the programs scored at a minimal or adequate level.

The findings show that Head Start and preschool/nursery school programs have the highest quality of care for young children in Pennsylvania. State policymaking should focus on utilizing Head Start as a statewide model, focusing on the key indicators that produce a quality program and supporting existing programs through additional training and education of existing staff.

Because of the low quality scores in child care centers as well as in family child care, the state should focus on improving the quality of existing programs before considering further expansion of services in the Commonwealth.

This study only focused upon preschool aged children. There is the need for a statewide assessment of the quality in infant-toddler care as well. The overall environmental quality of Pennsylvania child care centers and family/group child care homes has decreased from the mid 1990's. Additional research is needed in this area to determine the factors related to this drop in quality.

A clear direction for additional training would be to improve overall staff qualifications as well as focus on the specific ECERS-R/FDCRS items that were below a 4.00 level.

Education level is related to observed quality. There is a strong relationship between quality and higher child care home provider – where having a college degree had a more significant impact on quality. Having and utilizing a curriculum has a demonstrated impact on improving the environmental level of quality. It still remains that the type of setting has the greatest impact on the level of quality.

This study has provided valuable information to Pennsylvania on the quality of its early care and education programs in the summer/fall of 2002, which also provided a focus on the needs of our existing providers of care.

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Day Care Centers: A Theoretical Model for Computing Adult-Child Ratios

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1 Background

The staff-child ratio question is a very critical item when it comes to monitoring child care facilities. However, it has eluded proper measurement because of inadequate or time-consuming measures. Past methods have tried the direct approach of dividing the total number of children by the total number of teachers. This works, but does not give the overall day illustration; therefore it is only good as an incredibly gross measure. There have been discussions revolving around the dichotomous points of view of the states and the federal role in enforcing the various principles. Once it is decided what the ratios will be, how will compliance with the ratios be measured?

This is a new theoretical model for computing adult-child ratios that is not time-consuming and provides accurate information in an extremely concise fashion. With this new approach, all a day care monitor needs to do is ask six questions of the provider. Then put the data into a formula to find if the program is within compliance or not.

2 Formulas

Formula - # 1
$$CH = \frac{NC\,(TH+TO)}{2}$$

Formula - # 2
$$RWCH = \left[\frac{NC\,(TH + TO)}{2}\right]\left[\frac{1}{TA}\right]$$

Formula - # 3
$$RWCHR = \left[\frac{\sum NC_0\,(TH_0 + TO_0)}{2}\right]\left[\Sigma\,\frac{2}{TA}\right]$$

Formula - # 4
$$NC_0 = NC_p + NC_i + NC_s$$

Formula - # 5
$$TH_0 = TH_p + TH_i + TH_s$$

Formula - # 6
$$TO_0 = TO_p + TO_i + TO_s$$

3 Adult-Child Ratio Table

NC	CONTACT HOURS	RELATIVELY WEIGHTED CONTACT HOURS			RELATIVELY WEIGHTED CONTACT HOURS RANGE		
		I	P	S	I	P	S
1	8	8	8	8+	8	8	8+
2	16	16	16	16+	16	16	16+
3	24	24	24	24+	24	24	24+
4	32	32	32	32+	32	32	32+
5	40	40	40	40+	40	40	40+
6	48	24	48	48+	36	37-48	49+
7	56	28	56	56+	42	43-56	57+
8	64	32	32	64+	32	33-48	49+
9	72	36	36	72+	36	37-54	55+
10	80	40	40	80+	40	41-60	61+
11	88	29	44	44+	37	38-44	45+
12	96	32	48	48+	40	41-48	49+
13	104	35	52	52+	43	44-52	53+
14	112	37	56	56+	37	38-46	47+
15	120	40	40	60+	40	41-50	51+
16	128	32	43	64+	37	38-53	54+
17	136	34	45	68+	39	40-56	57+
18	144	36	48	72+	42	43-55	56+
19	152	38	51	76+	44	45-57	58+
20	160	40	53	80+	46	47-60	61+
21	168	34	56	56+	38	39-46	47+
22	176	35	44	59+	39	40-47	48+
23	184	37	46	61+	41	42-49	50+
24	192	38	48	64+	43	44-53	54+
25	200	40	50	67+	45	46-54	55+
26	208	35	52	69+	43	44-51	52+
27	216	36	54	72+	45	46-55	56+
28	224	37	56	75+	46	47-56	57+
29	232	39	46	77+	42	43-53	54+
30	240	40	48	80+	44	45-61	62+
31	248	35	50	62+	42	43-49	50+
32	256	37	51	64+	44	45-57	58+
33	264	38	53	66+	45	46-59	60+
34	272	39	54	68+	46	47-60	61+
35	280	40	56	70+	48	49-56	57+
36	288	36	48	72+	42	43-60	61+
37	296	37	49	74+	43	44-61	62+
38	304	38	51	76+	44	45-57	58+
39	312	39	52	78+	45	46-59	60+
40	320	40	53	80+	46	47-60	61+
41	328	36	55	66+	45	46-51	52+
42	336	37	56	67+	46	47-52	53+
43	344	38	49	69+	43	44-54	55+
44	352	39	50	70+	44	45-55	56+
45	360	40	51	72+	45	46-56	57+
46	368	37	53	74+	45	46-56	57+
47	376	38	54	75+	46	47-57	58+
48	384	38	55	77+	46	47-58	59+
49	392	39	56	78+	47	48-59	60+
50	400	40	50	80+	45	46-61	62+
51	408	37	51	68+	44	45-53	54+
52	416	38	52	69+	45	46-54	55+
53	424	39	53	71+	46	47-56	57+
54	432	39	54	72+	46	47-56	57+
55	440	40	55	73+	47	48-57	58+
56	448	37	56	75+	46	47-56	57+
57	456	38	51	76+	44	45-57	58+
58	464	39	52	77+	45	46-58	59+
59	472	39	52	79+	45	46-59	60+
60	480	40	53	80+	46	47-60	61+

TABLE OF CONVERSIONS FOR ADULT-CHILD RATIO TO = 8 TH = 8

4 More Details

The six basic questions are as follows:

1) When does your first staff member (teaching) arrive?
2) When does your last staff member (teaching) leave?
3) What is the number of teaching staff?
4) What is the total number of children present on your maximum enrollment day? What are their ages? Which staff members are assigned to each age group (if there is vertical grouping)?
5) When does your last child arrive?
6) When does your first child leave (if vertical grouping, give breakdown according to age)?

After these questions are answered, then the day care monitor will compute the number of contact hours (CH) between staff and children using the above formulas. In Formula # 1; NC = total number of children present on the maximum enrollment day; TO = total number of hours the center is open; TH = total number of hours at full enrollment; CH = contact hours between staff and children in any type of caring arrangement. After the CH is computed, the data is then put into another formula, which will determine the relatively weighted contact hours for horizontal grouping (RWCH), or the relatively weighted contact hours range (RWCHR) for a vertically grouped program.

In the formulas above, NC_0 = total number of children on the maximum enrollment day. TO_0 = total number of hours the center is open. TH_0 = total number of hours at full enrollment. RWCH = relatively weighted contact hours – indicator of compliance for horizontally grouped programs. RWCHR = relatively weighted contact hours range – indicator of compliance for vertically grouped programs. TA = total number of teaching staff. NC_i = total number of infants. NC_p = total number of preschoolers. NC_s = total number of school age children. TH_p = total number of hours at full enrollment with preschoolers. TH_i = total number of hours at full enrollment with infants-toddlers. TH_s = total number of hours at full enrollment with school-age children. Once the RWCH or the RWCHR figures are computed, it can be determined if the programs are within compliance by using Table of Conversions for RWCH and RWCHR (see Table).

This Table is computed from an ideal where TO and TH both equal eight hours. In other words, all staff and children arrive and leave at the same time, which is an ideal programmatic set-up. By using the Table of Conversions, it is relatively easy to compute if a program is within compliance. In the Table of Conversions I = infant-toddlers; P = preschoolers; S = school-age children. For example, in the Table of Conversions, look under the NC column and match the number with the same on in the formula. Then look under the CH column and match the number with the same one in the formula. Now look under RWCH in the P (preschoolers) column. In reading the Table of Conversions, if a program received a score equal to or less than the score on the Table it will always be within compliance. If the program receives a score greater than the score on the Table for that particular category, then the program will always be out of compliance. The aspect of the above theoretical model is that it takes both time and numbers of staff into account. It is a simple one-shot mathematical calculation, and it can determine if a program is within compliance or not.

Infant Caregiver Mentoring Project

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INTRODUCTION

Mentoring in childcare has been documented in the literature (Breunig & Bellm, 1996; Fenichel, 1992) and has been demonstrated to be an effective mode of training/technical assistance (Breunig & Bellm, 1996). However, in the majority of studies conducted there are few, if any, demonstrations that utilize a randomized trial design (Breunig & Bellm, 1996). Many studies track the progress of the intervention group, some studies have comparison groups, but few, if any, have employed a randomized design. This research describes the pre-test and post-test data collected as part of a study that employed a randomized design.

The majority of research (Clarke-Stewart, 1987; Goelman & Pence, 1987; Howes, 1987; Phillips, 1987; Kontos & Fiene, 19887; Galinsky, Howes, Kontos, & Shinn, 1994; Scarr, Eisneberg, & Deater-Deckard, 1994; Iutcovich, Fiene, Johnson, Koppel, & Langan, 1997; Helburn, 1995; Fiene, 1995, 1996; Jorde-Bloom, 1988; Love, Schochet & Meckstroth, 1986) completed on early childhood quality was focused on preschool programs, with infant toddler programs rarely as the central focus of the research. The research completed in infant toddler programs clearly documented the mediocre level of care provided to children in these programs (Iutcovich, Fiene, Johnson, Koppel, & Langan, 1997).

This study focuses on the first three years of life, which includes describing a child care mentoring project designed to improve the quality of infant and toddler child care programs in South Central Pennsylvania. All centers and the classrooms reported upon in this study serve children from birth to less than three years of age. The mentoring project was to improve the quality of the child care environment and specifically the quality of caregiver-child interactions. As most caregivers in Pennsylvania only receive workshop training, the goal of this project was to compare the mentoring approach to the more typical workshop training. Mentoring is being explored because of its targeted intensive one-on-one nature in delivering training to caregivers based upon needs assessments.

METHODS

This study involved a randomized design 52 caregivers from 27 sites in South Central Pennsylvania. All programs were child care centers licensed by the Department of Public Welfare. Seven of the sites were accredited by the National Association for the Education of Young Children. The self-selected group of programs and caregivers were randomly assigned to one of two groups, which consisted of either the mentoring group or the comparison non-mentoring comparison/control group. Intervention model mentoring group received intensive mentoring from a seasoned early childhood professional (minimum of 5-7 years of experience in the early childhood field as both a director and teacher) from September to December 2000. The mentoring model consisted of a problem solving approach in which the mentor spent a good deal of time observing in the beginning weeks in order to develop a trusting relationship with the protégé. Once both the mentor and protégé felt comfortable then suggestions could be entertained by the mentor.

METHODS

The comparison group did not receive the mentoring intervention and only had the regular workshop type variety training available to them but they did receive mentoring from March to June 2001. Interestingly, this study determines how much the two groups had improved from the pre-test data collection because they were essentially equivalent at that point on all measures.

Programs were recruited by the Capital Area Early Childhood Training Institute, a broad based community focused training institute. Program directors were invited to attend a meeting describing the mentoring project. Of those attending, 95% agreed to participate in the project. Fifty two caregivers started the project, 14 caregivers dropped out of the project between pre-test and post-test. There was an equal dropout rate from both the mentoring and the control groups. Data from the four quality measures used for all the programs are presented in Table 1. The four measures of quality were the Infant Toddler Environment Rating Scale (ITERS), the Arnett Caregivers Observation Scale, the Knowledge of Infant Development (KIDI), and the Bloom Scales of Organizational Climate.

Of the program director's, 8% had associate degrees, 78% had bachelor's degrees, and 14% had master's degrees. They had been employed as directors in their program for an average of 31 months with a range from 1 month to 120 months. Their average pay was between $20,000 and $25,000 per year. Sixty percent had health insurance and 45% had some form of dental of life insurance along with 45% in a retirement system.

Of the caregivers, 57% had high school diplomas, 16% had some college credits, 5% had CDA's, 16% had associate degrees, 5% had bachelor's degrees, and 2% had master's degrees. They had been employed as caregivers in their programs for an average of 34 months with a range from 1 month to 153 months. They had worked in the early childhood field as caregivers for an average of 71 months with a range from 1 month to 312 months. Their average pay was between $10,000 and $15,000 per year. Fifty percent had health insurance and 33% had some form of dental or life insurance along with 33% in a retirement system. The average size of the centers was 98 children with 17 staff employed either full-time or part-time at the program. The average weekly fee for infant care was $137.00 per week and for toddler care was $124.00 per week. The majority of staff was employed at the centers either less than 1 year or greater than 5 years.

RESULTS

Table 1: Arnett, Bloom, ITERS, KIDI Scale Scores

All Programs (n = 38)	Pre-Test	Post-Test	Change	Significance
Arnett	30	40	+10	ns
Bloom	78	79	+1	ns
ITERS	134	140	+6	ns
KIDI	14	14	-0-	ns

Table 3: Mentoring group

	Pre-Test	Post-Test	Significance
ITERS subscales			
Routines	36	41	.005
Listening activities	8	9	ns
Learning activities	28	31	.05
Interactions	13	13	ns
Adult needs	17	19	ns
Arnett subscales			
Sensitivity	26	31	.001
Appropriate discipline	7	9	.05

Table 2: Pre-test and post-test for the intervention and control groups

	Pre-Test	Post-Test	Change	Significance
Arnett				
Mentoring Group	29	40	+11	ns
Control Group	33	40	+7	ns
Bloom				
Mentoring Group	73	74	+1	ns
Control Group	87	91	+4	ns
ITERS				
Mentoring Group	134	141	+7	ns
Control Group	137	132	-5	ns
KIDI				
Mentoring Group	14	14	-0-	ns
Control Group	14	15	+1	ns

Table 4: Control group

	Pre-Test	Post-Test	Significance
ITERS subscales			
Routines	41	42	ns
Listening activities	9	8	ns
Learning activities	29	31	ns
Interactions	15	13	.02
Adult needs	17	17	ns
Arnett subscales			
Sensitivity	28	31	ns
Appropriate discipline	6	7	ns

RESULTS

Both the mentoring and comparison groups were tested for equivalence at the beginning of the project in the pre-test data collection phase. There were no statistically significant differences on any of these measures at the pre-test. When the programs and caregivers were measured at the post-test, positive changes occurred although none were found to be statistically significant. In the aggregate, the programs that continued with the mentoring project showed improvements in the overall quality of care.

The pre-test and post-test data for the intervention and control groups is shown in Table 2. These results indicate that the mentoring group showed increases on the program quality scales (ITERS and Arnett). This increase was especially noticeable on the ITERS. There was a decrease in program quality with the control group, going from a score of 137 to 132. On the Arnett scale the mentoring group increased greater than the control group (11 point increase versus a 7 point increase).

Although the above results did not reach statistical significance, when specific subscales are analyzed several show significant differences (see tables 3 and 4). Several of the subscales on the ITERS and Arnett reached statistical significance with positive changes in routines (greeting/departing, meals/snacks, nap time, diapering/toileting, health/safety practice/policy) learning activities (eye-hand coordination, active physical play, blocks, pretend play, cultural awareness), sensitivity, and appropriate discipline for the mentoring group. The only statistically significant finding with the control group was in a negative change in interactions in which the scores decreased from pre-test to post-test. Paired t-tests were used in all of these analyses in tables 3 and 4.

DISCUSSION

This data demonstrates that the sites that were mentored improved on the ITERS and the Arnett. This is an encouraging result in that the intervention was only 4 months long. It is an important finding because the majority of mentoring projects in the past have utilized anecdotal evidence to demonstrate their effectiveness. Very few programs have conducted randomized trials of their interventions.

It is clear from the data that training/technical assistance interventions are needed in infant toddler programs because of the low scores on various program quality measures. It is also discouraging in that the control programs did not improve in which the ITERS went from 137 (pre-test) to 132 (post-test). This is a finding that will be monitored over time to see if this trend continues. Hopefully this was just an aberration in the data; however there does seem to be support when these data are compared to other studies (Iutcovich, Fiene, Johnson, Koppel, & Langan, 1997).

The public policy implications are that an intensive mentoring intervention of only four months can produce positive, although not statistically significant, changes in the overall quality of child care programs both globally and with caregiver interactions. Previous research (Johnson, 1994) has indicated that increasing the number of hours of training produces more developmentally appropriate behaviors in child care staff. Mentoring fits this model because it is an intensive one-on-one intervention in which the mentor and protégé are engaged in problem solving activities to improve the overall quality of the interactions and environment of the child care programs.

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Internet Delivery within Course Content and Learner Satisfaction in Early Childhood Education

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Introduction

The internet is an ever expanding tool for learning, including distance education (Benson & Meyers, 2000; Lan, 1999; Owston, 1998; Williams, 1996). Whether or not the Internet can be an effective tool for training staff within the human services, particularly childcare staff, needs to be explored. Our project evaluated the effectiveness of the Internet training in terms of learning outcomes, its implementation (specifically, the technological aspects), and the student's level of satisfaction with the course. The impetus for our project came from two sources.

First, Pennsylvania delivers childcare training to all licensed and registered childcare providers in the state and is interested in making this system more cost effective and efficient. Discussions related to utilization of the latest technologies, such as the Internet, are being considered. Secondly, a new initiative, CyberStart, will link all licensed childcare centers in Pennsylvania to the Internet. While this initiative is specifically designed to offer Internet access and educational programming for children, it will also make this technology available to childcare staff. Hence, there is a need to evaluate the feasibility and effectiveness of Internet-based distance education as it becomes more available to childcare centers.

Methodology

A quasi-experimental design was employed, which consisted of four groups of five students who enrolled in the early childhood education (ECE) course ECE 479 *The Young Child's Play as Education Process*, which focused on play, communication, and curriculum.

1) A group experienced the traditional lecture/discussion course format.
2) A group took the course on the Internet, but within the context of a computer lab (located at Penn State York) where they had the opportunity to interact with their peers and the instructor.
3) A group took the course on the Internet as part of a local distance education (DE) group; this group also had some face-to-face interaction with their peers and knew the instructor.
4) A group took the course on the Internet, but as part of a statewide DE group. This group had no face-to-face interaction with their peers or the instructor.

This research design enabled us to examine the available technology to determine any hardware or software constraints, as well as the efficiency of the technological support services, by comparing groups that took the course via the Internet in different environmental circumstances (i.e., the on-campus computer lab vs. a home-computer set up). The research design also permitted us to evaluate the importance of the human element as a component of the effectiveness of this training modality since participants were in controlled settings with varying possibilities for face-to-face interaction.

Given the exploratory nature of this study, a qualitative approach with a small sample was employed to generate data from questionnaires and interviews, as well as from course assignments completed by students. The questionnaire included items that tapped demographic characteristics (age, sex, and prior education), current position and experience within childcare, and experience with computers. Phone interviews, administered before and after the course, and lasting in duration from 30 to 45 minutes each, assessed students' knowledge about play and perceptions about the course. In addition, select course assignments were independently graded to assess knowledge. The course aimed to increase the students' knowledge about play and its practical application. Two measures of the learning outcomes were used:

➢ interview responses to questions about play given before and after the course
➢ grades on selected course assignments.

A group took the course on the Internet, but as part of a statewide DE group. This group had no face-to-face interaction with their peers or the instructor.

Methodology

From the phone interviews, students' answers to four questions about *play* were evaluated. The questions were:
❖ What is play?
❖ What is the value of play?
❖ What is positive play?
❖ How can adults have a positive influence on play?

An empirically based coding system was developed and employed to score students' answers. Participants of the study consisted of 20 students who were all female and ranging in age from 23 to 60 with a mean of 39 years.

The course *The Young Child's Play as Educative Process* (ECE 47), offered by the Department of Curriculum and Instruction in the College of Education at The Pennsylvania State University, was selected for this experimental study of Internet-based instruction. Developing the course for Internet-based instruction required connecting with the Penn State World Campus (on-line learning). The stages of the course development include:

1) **Course structure** – Requirements included an observation project, designing play environments, writing letters explaining play-based teaching to parents and to a 'blue ribbon committee' of educational professional, as well as doing an implementation project and keeping a journal. *The Instructor's Manual to Accompany Johnson/Christie/Yawkey Play and Early Childhood Development, Second Edition* (Johnson, 1999) provided the guidelines for the overall course organization and sequencing, which followed the chapters of the text, with the content going from theory and research to policy and practice.

2) **Course content** – The course was organized into four modules with a number of online lessons or sessions in each module. Students had a reading assignment for each session and a self-administered objective-item exam, which produced computer-generated feedback for self-evaluation. The objective items and the open-ended discussion questions came from the instructor's manual.

3) **Course programming** – The course program included some special features to make the on-line learning experience more interesting. An animated pop-in character (a cartoon owl) appeared on their screen at various selected points throughout the sessions to ask questions as a real classmate might. A home page was also created for the course.

Results

Students reported prior experience using personal computers ranged from no experience to 15 years with a mean value of 4.1 years. A questionnaire item asked who usually provided technical support for their home PC (e.g., installing new software or hardware, answering software questions, and fixing problems). No more than five students usually relied on themselves for technical support for their home PCs. Of the four students who chose "other," three students usually relied on a friend, and one usually relied on another teacher in her childcare center.

For the following four *play* question, each student's answers given in the post-course interview were compared with the pre-course answers in order to evaluate whether there were response improvements, defined by an increase in positive responses and/or a decrease in negative responses.

Question 1: What is the definition of play?

All classroom and computer lab students improved, as did the three statewide DE students who stayed in the course. Classroom and lab students showed few negative responses before or after the course, while local DE students gave 8 negative responses and statewide DE students gave 13 negative responses before the course. However, in post-course interviews the six DE students made only five negative replies.

Results

Question 2: What are the benefits of play?

As can be seen in Table 1, the classroom and lab students performed better than the local DE and statewide DE students on this item. They were able to identify significantly more functions of play, especially after the course was taken. Nine of ten students in the classroom/lab groups improved, but only 3 of 6 in the DE groups did.

Question 3: What is good play?

Only seven of 16 students improved. Evidently, the course did not impact very much how well students could answer this question. Most students talked about types, functions and characteristics of play and failed to differentiate good play from play in an acceptable manner as determined by the coding and scoring system used in this study. This discouraging result may be because the scoring criteria were too harsh, or perhaps because interviewees did not understand the question.

Question 4: How can adults make child's play better?

Table 2 shows the mean scores across groups and for before and after the course. There were 11 students who improved, with all but one of them coming from the classroom or computer lab research groups. Only one student in a DE group improved. Five students in DE groups actually performed more poorly in answer to this question after the course was over. In sum, the course influenced students' performance in identifying adult roles in children's play differentially depending on what research group they were in – classroom and lab students outperformed DE students.

There were three assignments that were graded for all the students: implementation activity (A), a parent letter (B), and a blue ribbon letter (C). As shown in Table 3, a comparison of the grades on these assignments across all four groups did not reveal that any one group consistently scored higher than the others. However, the traditional classroom group did score the highest on assignment B and had the second highest set of scores on assignments A and C.

For assignments A and B the differences in scores for the four groups were statistically significant. No significant differences were found for Assignment C. The computer lab group scored the lowest on assignments A and B while the other three groups of students all scored about the same. When all the assignments are totaled for an overall score, the traditional classroom performed significantly better than the other three groups.

Respondents revealed general satisfaction with the content of the course, the course activities, and the course requirements. There was a strong appreciation and high evaluation for the teacher. Even with good course content, instructional design, teacher, and technical delivery, there were several people who clearly indicated reservations about Internet learning because it lacked face-to-face interaction. These people indicated that even if there were no technical difficulties, they would miss the human contact and would prefer courses or training taken in a classroom where there was greater opportunity for interpersonal interaction and contact.

Table 1: Pre- and post- course mean scores for benefits of play across four conditions				
Groups	Classroom	Computer Lab	Local DE	Statewide DE
Pre-course	5.2	4.0	3.8	3.0
Post-course	8.4	7.2	3.3	5.6

Table 2: Mean scores for total roles across groups before and after the course				
Groups	Classroom	Computer Lab	Local DE	Statewide DE
Pre-course	3.8	2.4	4.0	3.6
Post-course	7.0	4.6	3.3	5.6

Results

Table 3: Scores on course assignments across four groups				
Groups	Assignment A	Assignment B	Assignment C	Total
Classroom	2.86	3.86	2.75	9.47
Lab	1.90	2.63	3.00	7.53
Local DE	2.69	3.37	2.50	8.56
Statewide DE	2.99	3.61	2.35	8.95

Conclusion

This evaluation provides insights into offering ECE courses over the Internet. It seems that the success of this technology is dependent upon the persistence and knowledge of the student for learning to occur. Four students who did not complete the course were from the local (N=2) and statewide (N=2) Internet-based distance education groups; none were from the traditional classroom or computer lab settings. The students had considerable difficulty in accessing and doing the course online. Possibly the dropout rate would have been greater if the students were at a beginning stage of their career (Cohen, 2000; but see Schrum, 1992). Students in the traditional classroom and in the computer lab groups, where there was more face-to-face interaction, scored the best on the interview play evaluations.

On the three course requirements, the classroom group scored the highest on assignments summed together (9.47); but the computer lab group scored the lowest on the assignments (7.53), with the two distance education groups in the middle. This is in consistent with the results from the analyses of the interview responses to the four questions about play. Here both the classroom group and the computer lab group gained the most. The students in the two distance education groups scored higher on the course assignments compared to the computer lab group, their results were still lower than the students' scores from the traditional classroom group.

For Internet instruction to be effective it seems that students must be technologically literate and knowledgeable about course content to some degree, and they must be persistent and highly motivated. Without these personal characteristics, the Internet course experience may not be a positive learning experience. The Internet training for childcare staff needs to be targeted, beginning with directors of programs, who generally have the greatest experience and education and potential exposure to computer technology.

Internet technology provides a great deal of promise for reaching childcare staff with needed specialized in-service training in ECE. But first it is necessary that the technology gets the fine-tuning to ensure its effectiveness as a training modality for the majority of childcare provides.

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Eating Behaviors of Young Children in Childcare Programs

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INTRODUCTION

Given the epidemic of overweight and obesity among children, helping them to eat better is an important goal. There are few interventions that are effective in dealing with childhood overweight and obesity. Majority of preschool-age children participate in some form of childcare, and eat one or more of their daily meals during that time. Childcare programs are a natural portal for interventions targeted to young children and their families. Many types of interventions related to childcare and childhood obesity have already been instituted at the state, regional and local levels. These are very broad-based public policy initiatives that lack empirical support for their effectiveness. At the local level, workshops, classes, seminars, technical assistance and, most recently, mentoring sessions seek to address childhood obesity.

The primary focus here is on mentoring because it has been demonstrated to be the most effective in producing behavioral change in childcare settings. The use of mentoring in childcare has been documented in the literature for the past 10 to 15 years (Breunig, 1996; Fenichel, 1992). It has been demonstrated to be an effective mode of training (Breunig, 1996). This study in south central Pennsylvania (Fiene, 2002) demonstrated the effectiveness of a mentoring approach with infant/toddler caregivers, which involved 40 caregivers from 20 childcare sites licensed by the Pennsylvania Department of Public Welfare (Southcentral Pennsylvania Infant Child Care Provider Mentoring Study, supported by the Pennsylvania Department of Public Welfare, July 2000 – June 2003). The results reported are from the pre-test and post-test data collection phase of the study, and include descriptive data on individual programs, program directors and caregivers, as well as comparisons among programs.

METHODS

The study employed a truly randomized design: 20 participating childcare programs were randomly assigned to one of two groups, either the mentoring group or a control group without mentoring. From September to December 2001, staff in the mentoring group received intensive mentoring from a seasoned early childhood professional. That individual had many years of experience in the early childhood field as both a childcare program director and as a teacher. The control group received routine in-service training, which included workshop training that was available in the local community, but they did not receive the mentoring intervention. The control group did subsequently receive the mentoring intervention from March to June 2002. The study sought to determine how the two groups changed from the pre-test data collection period (September 2001 to June 2002), which is when they were essentially equivalent, till after the mentoring period.

To assess changes in the caregivers, the study used four data collection and measurement tools:

- Infant Toddler Environmental Rating Scale (ITERS), a global measure of infant classroom quality
- Arnett Caregiver Observation Scale, a measure that rates the interactions between children and their caregivers
- Knowledge of Infant Development Inventory (KIDI), a measure that gives an indication of the overall knowledge that an individual has of infant development
- Bloom Program Administration Scale, a measure that rates the overall organizational climate of a childcare center

RESULTS

The similarity of the mentoring and control groups was assessed during the pre-test data collection phase. Two groups showed no statistically significant differences on any of the 4 measures. The programs and caregivers that were measured again at the post-test show a significant difference. The programs that continued with the mentoring project (N=20) showed improvements in the overall quality of care. Four caregivers (10%) dropped out of the project between pre-test and post-test, two were in the mentoring group and two were in the control group. The programs that received the mentoring intervention had as much difficulty retaining staff as did the control group. The only factor that correlated highly with staff retention was the salary of the caregiver (R=.68). There was also a strong relationship between staff salaries and the ITERS score (.77) and Arnett (.45) score:

- The higher the salaries, the higher the rating of overall program quality and child/caregiver interactions.

RESULTS

Table 1 shows the data by the mentoring group versus the control group and includes the pre-test and post-test along with the change. Overall, the measures did not reach statistical significance in all cases but the results show that many did reach statistical significance in the individual items measured by each tool (see Table 2 and 3). It appears that mentoring has a positive effect for all of the intervention programs, but it worked best in those programs in which the staff was most receptive. Interestingly, the results also show the relationship between the Bloom scale and the ITERS and the Arnett scales. The overall organizational climate of the center appears to have an influence on how a program's quality increases over time. More than 40% of the variance in overall quality of childcare programs was accounted for by how staff felt decisions were made at the center and how closely the center came to the ideal for staff pay and promotion opportunities, relationships with co-workers, agreement among staff on program goals, innovativeness and creative problem solving. The results show how the mentored programs improved from the pre-test to the post-test on several program quality measures. Another interesting result was the strong relationship between organizational climate scores on the Bloom scale and the overall program quality scales on the ITERS and the Arnett. In a statewide study, more than 70% of childcare centers where nutrition-related activities were measured (Fiene, Greenberg, Bergsten, Carl, Fegley, & Gibbons, 2002). The public policy implications of the findings from this randomized clinical trial are significant because they demonstrate that a mentoring intervention can produce positive changes in the quality of childcare programs. The results of this study suggest that the only factor that impacts turnover is the salary of the staff: The higher the salary of staff, the lower the turnover rate.

In summary, from a public policy perspective, this research study indicated that the most important factors for improving the overall quality of childcare programs include the following:

- Training that is targeted through a mentoring approach (70 to 85 hours at a minimum over 4 months)
- An educated program director (with at least a bachelor's degree in early childhood education and state teaching certification)
- Experienced caregivers (with 5 years or more in the childcare field)
- Appropriate compensation (i.e., $20,000 to $25,000 annually for caregivers/teachers and $30,000 to $35,000 for directors)
- A program director who has an open-minded decision-making process in which she/he is willing to engage teaching staff in all decisions related to professional development

Table 1: Results on 4 Measures for the Mentoring Intervention Group (N=18) and Control Group (N=22)

Measure	Pre-test		Post-test		Change	
	Intervention	Control	Intervention	Control	Intervention	Control
ITERS	3.89	4.05	4.74	4.00	+0.85 *	(-0.05)
Arnett	3.33	3.36	3.84	3.50	+.51	+.14
KIDI	70%	70%	90%	70%	+20% *	-0-
Bloom	83	87	94	91	+11	+4.0

*P<.01

Table 2: Results for the Intervention Group for Items Contained Within 2 Measurement Tools

Tools and Areas Measured	Pre-test	Post-test	Significance
ITERS:			
Routines	4.03	5.21	.005
Listening activities	3.77	4.50	.05
Learning activities	4.00	4.71	.05
Interactions	3.89	4.91	.01
Adult needs	4.10	4.70	.05
Arnett:			
Sensitivity	3.33	3.90	.001
Appropriate discipline	3.40	3.70	.05

Table 3: Results for the Control Group for Items Contained Within 2 Measurement Tools

Tools and Areas Measured	Pre-test	Post-test	Significance
ITERS:			
Routines	4.10	4.20	--
Listening activities	4.01	3.89	--
Learning activities	3.99	4.11	--
Interactions	4.00	3.56	.02
Adult needs	3.90	3.90	--
Arnett:			
Sensitivity	3.46	3.50	--
Appropriate discipline	3.33	3.34	--

DISCUSSION

A series of studies conducted by Fiene in 2002 demonstrated that traditional workshop training for caregivers is not effective. The issues of staff compensation in the childcare setting must be addressed in public policy. At a state level, there are a number of public policy initiatives that deal with childhood obesity. North Carolina, New York, and Texas have implemented innovative efforts to deal with this issue at a more global level than the mentoring intervention. With mentoring, caregivers are shown that they have a unique opportunity to provide nutrition education to children on a continuing basis. Ideally nutrition and physical activity should be part of the ongoing childcare curriculum.

Nutrition education during the early childhood years is especially important because it is during this period that lifetime eating habits are formed. The quality of nutrition for children 2 to 5 years of age is especially important because it affects their growth and development. Without nutrition education and guidance, they tend to choose foods that are high in sodium, salt, sugar and fat, or those foods that are familiar to them. The goal of nutrition education in childcare is to encourage children to make wise choices about the foods they eat. Caregivers can teach children to recognize the link between nutrition and physical well-being. Children need to be given basic information on the nutrients in foods and their effect on physical growth and development. Recommendations for caregivers on helping children learn to eat healthy foods in a healthy way include the following:

- Serve children age-appropriate amounts and offer seconds only if the child asks for more
- Encourage children to eat slowly
- Serve meals and snacks at specific times and remove food when mealtime is over
- If a child chooses not to eat, then remove the food and tell the child it is time to move on to the next activity
- Eating is a behavior that is strongly influenced by the social environment (i.e., seating a child who refuses to eat corn with other children who enjoys eating corn)
- Caregivers should model what they teach

CONCLUSION

This study discussed using childcare programs as a portal for interventions to change children's eating behaviors, focusing specifically on mentoring of providers as an intervention model. The mentoring model is an approach that all 50 states can use as all have training systems that are funded through the Federal Child Care Development Fund. Previous research has shown the importance of commitment to professional development and the overall quality of the childcare program (Iutcovich, Fiene, Johnson, Koppel, & Langan, 1997). Data from this study supports this initial finding. The findings in this build upon the findings of previous studies and demonstrate the importance of an organizational climate that supports opened and self-sufficiency in decision making (Johnson, 1994).

Mentoring can easily include specific components that deal with children's eating. The predominant training approach in childcare programs remains traditional workshops that have been demonstrated to be ineffective in training interventions. Mentoring does cost more to deliver but the effectiveness of this approach offsets its expense. A mentoring approach that focuses on children's eating behaviors during the hours they spend in childcare can be a very effective intervention strategy for producing positive changes in these specific behaviors.

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