

Original research

Child care quality and parental satisfaction with the care provided by childcare centres in Kandy, Sri Lanka.Samidi Navaratna^{1*}, Upul Senarath²¹ Department of Community Medicine, Faculty of Medicine, University of Peradeniya, Sri Lanka² Department of Community Medicine, Faculty of Medicine, University of Colombo, Sri Lanka**Abstract**


The information regarding the quality of care provided by childcare centres in Sri Lanka is insufficient. We aimed to assess the quality of care and parental satisfaction related to childcare centres in Kandy municipality, Sri Lanka.

The quality of 40 childcare centres was measured using the Revised Early Childhood Environment Rating Scale (ECERS-R), and in 20 of them, using Revised Infant and Toddler Environment Rating Scale (ITERS-R). A self-administered questionnaire was used to collect details of caregivers (n=129) and centres. Parents (n=484) were interviewed to assess satisfaction using a 20-item scale. The standard scoring system was adopted for the quality measured by the ECERS-R, and t-test or one-way ANOVA was used for comparing mean scores between centre characteristics.

Quality of care as measured by ECERS-R was 'inadequate' in 15%, 'minimal' in 77.5%, and 'good' in 7.5% of the centres, whilst the respective percentages with ITERS-R were 5%, 80%, and 15%. The quality as measured by ECERS-R was significantly higher in centres with higher fees (F=7.60, p < 0.001), lower children per caregiver ratio (F=6.72, p<0.01), and when age-based small groups used (t= - 4.732, p < 0.001). An inverse relationship was disclosed between centre quality and years in service of the caregiver (F=8.305, p<0.001). The majority of parents were 'very satisfied' with most of the satisfaction items.

Quality of care in the majority of centres was 'minimal' and high-quality childcare was associated with increased fees. Quality of care may be improved by reducing the number of children per caregiver and grouping children into small groups by age.

Keywords: childcare, quality, childcare centres, daycare, parents' satisfaction, ECERS-R, ITERS-R

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Introduction

The health and development of a child are strongly influenced by relationships between the child, parents, and other caregivers [1-3]. Changes in the family structure from “extended family” to “nuclear family”, increasing female employment in both rural and urban sectors, scarcity of domestic helpers as well as safety issues have led to an increased demand for childcare centres in Sri Lanka. Thus, enrolling children in childcare centres seems to be serving two purposes in Sri Lanka, namely enabling parents to engage in work through day-care settings and providing early educational and social activities for the children through kindergartens (preschools) [4].

The importance of early childhood stimulation and education has received attention in Sri Lanka since the beginning of this millennium [5,6]. However, organized childcare centres are still evolving in the country. Presently, the most well-known childcare centres are preschools, the primary purpose of which is to prepare 3-5-year-old children for schooling. In some of these preschools, there are daycare facilities where the young children are looked-after after the preschool hours to help working parents. Some organisations offer employer-sponsored childcare at the place of employment, such as the crèches that are well spread throughout the estate plantation sector.

Despite strong evidence that around 80% of the child’s brain develops in the first three years of life, the care, attention, affection, and stimulation that children receive during the early stages of life determine their later intellectual and emotional capabilities [2,7], little attention has been given to the quality of childcare in Sri Lanka [4]. Only a couple of studies have been conducted related to the quality of childcare centres in Sri Lanka, and none of them has been in Kandy, Sri Lanka [8,9].

Choosing childcare centres with holistic care can be quite challenging. The quality of a childcare centre is significantly influenced by both structural and process variables. Structural variables include the child-to-staff ratio, the size of the group, and caregiver education and training. A child’s interactions with caregivers, peers, and materials are process variables. The Revised Early Childhood Environment Rating Scale (ECERS-R) and the Revised Infant and Toddler Environment Rating Scale (ITERS-R) are the most commonly used tools to measure the quality of childcare centres. Parents’ perceptions of the quality of their child’s and family’s

needs, as well as their overall focus on the childcare service, are useful in improving the quality [10,11]. Prior international research has shown that parents are overly happy with their childcare services [12-14] and that they prefer nearby childcare facilities, and that the likelihood of selecting a facility with a lower child: staff ratio, rises with a higher paternal income [15]. Despite being significant stakeholders in childcare services, parents’ opinions have not been explored in any of the published studies on childcare in Sri Lanka.

This study aimed to assess the quality of care provided by the childcare centres and determine parental satisfaction with the care provided by the childcare centres within the Kandy Municipal Council (KMC) area in the Central province of Sri Lanka.

Methodology

Design, setting, and sample

A cross-sectional descriptive study was carried out as part of a larger study in the KMC area. Kandy is the main city of the Central Province and the terrain of the KMC is 27 square km, while the estimated population is about 158,561 [16]. According to the government statistics, there are 94 state-run preschools, 1159 private and estate preschools, nine preschools run by religious groups, and another nine run by non-government organisations in the Kandy district. Therefore, the total number of preschools in the Kandy district is 1271 [17], however, the exact number of preschools within KMC is not available. Information from the business register maintained by the Chief Secretariat Office and information from the KMC indicated the number of preschools in the area to be 107, and of these, the number of preschools with daycare facilities was estimated to be 24. A total of 40 childcare centres i.e., 20 preschools without daycare facilities and 20 preschools with daycare facilities were chosen for the study.

All the permanent caregivers/ teachers present at the time of data collection ($n = 129$) and parents ($n = 484$) of the children less than 5 years of age receiving care at these childcare centres were considered eligible to participate in the study. The number of parents to be included from each childcare centre was determined in proportion to the number of children registered at each childcare cent. Only one parent of a given child was considered eligible for the study. Any person other than the mother or father accompanying the child to the childcare centre was excluded.

Study instruments and data collection

The quality of the structure and processes at these centres (n=40) was measured using the ECERS-R, which is a globally validated instrument used to measure input quality in early childcare settings. This comprises 43 items that evaluate seven aspects of centre-based care for children aged two and a half to five years, namely, space and furnishings, personal care routines, language reasoning experiences, motor activities, interactions, programme structure, and parent and staff needs [10]. In addition, the ITERS-R was used to assess the quality of centre-based care for children less than two and a half years old (n=20) [11].

The ECERS-R is composed of 43 items that evaluate seven aspects of centre-based care for children aged two and a half to five years. These areas are space and furnishings, personal care routines, language and reasoning experiences, motor activities, interactions, programme structure, and parent and staff needs. Global process quality measures such as ECERS-R include health and safety indicators of quality as well. Detailed descriptors are provided for each item, and each item is rated as inadequate [1], minimal [3], good [5], or excellent [7]. The ratings, according to the scale developers, are based on a minimum of a two-hour block of observation in the centre. The ITERS-R is a related measure that assesses process quality in a centre for children younger than two and a half years. The criterion validity of the scales has been demonstrated in comparison with other well-known tools for assessing quality, such as the Programme Quality Assessment scale. Validity has been reinforced by the number of studies (> 200) that support using it as a tool for assessing quality childcare environments, including in developing countries and socially disadvantaged groups [10,11]. The subscale items assessed under each scale and subscale as well as an example of a score sheet are given in the attached supplementary documents.

The observations of each centre were carried out by the first author and nearly three hours were spent at each childcare centre. The principal caregiver in each childcare centre was given a self-administered questionnaire to collect background data on the childcare centres and to determine caregiver characteristics that can affect the quality of childcare, such as formal level of education, Early Childhood Care, and Development (ECCD) training, salary, tenure, civil status, job satisfaction, etc.

The parents were interviewed using a structured questionnaire to determine socioeconomic factors as

well as parental perspectives regarding centre-based childcare. The content of the questionnaire included some aspects like satisfaction with convenience in location, affordability, physical facilities, welcoming attitude of the staff, care, safety and health, learning activities, and child's behaviour. The responses to the items related to satisfaction were marked on a 5-point Likert scale, ranging from 'very satisfied' to 'very dissatisfied'. To ensure the quality of the data, the data collectors were trained and the questionnaires were pre-tested at a model childcare centre.

Ethical approval was obtained from the Ethical Review Committee of the Faculty of Medicine, University of Colombo. Permission to use the ECERS-R and ITERS-R scales was obtained by purchasing the scales. Informed, written consent was sought from the centre managers, caregivers, and parents before the commencement of the study.

Data Analysis

Socio-demographic characteristics of childcare centres, caregivers, and parents were analysed by calculation of frequencies. The quality of the centres as rated by the ECERS-R scores was analysed as frequencies, and cross-tabulations were performed with other relevant childcare centre and caregiver characteristics. When the quality of the childcare centres was measured using the ECERS-R and ITERS-R, a score on a continuous scale from 1.00 to 7.00 was given for each subscale, and the total average ECERS-R and ITERS-R scores were calculated for each centre. The overall mean score was classified as inadequate (1.00-2.99), minimal (3.00 - 4.99), or good (5.00-6.99) quality. Bivariate analyses were carried out using the independent samples 't test' and ANOVA to compare the mean ECERS-R scores across various childcare centre and caregiver characteristics.

Parental satisfaction was analysed by using the frequency distribution of different levels of satisfaction. As the responses to satisfaction were very positive, responses were collapsed into a dichotomous variable indicating 'very satisfied' (ratings of 5) and 'not very satisfied' (ratings of 0, 1, 2, 3, and 4) in the posthoc analysis.

Results

There were 1850 children in the childcare centres studied, with a wide range (10–130) in the number of children enrolled in each childcare centre. Childcare centres with daycare facilities enrolled children younger

than 2.5 years, but only three centres admitted children younger than one year. The characteristics of the CCCs are shown in Table 1. The majority (87.5%) of childcare centres are registered (57% with the municipal council, 28.5% at the chief secretary's office (business register) and 8.5% at the Department of labour, and 6% at the Ministry of Education) and belong to the private sector (67.5%). As shown in Table 1, the majority (35%) charged between LKR 1000 and 2000 per month for a child, whilst all state-run centres were non-fee-levying. Only 2.5% and 15% provided meals to children and had facilities for children with

special needs, respectively. All but two centres worked according to a scheduled programme.

As shown in Table 2, first aid facilities were not available in 20% of the childcare centres and the difference observed between the preschools and the preschools with daycare facilities was not statistically significant ($\chi^2 = 0.625$, $p = 0.346$). Approximately one-third of the childcare centres were visited by the Public Health Midwives (PHMM) and the growth of children were routinely monitored. A significant difference was observed in the growth monitoring between the two strata ($\chi^2 = 8.64$, $p = 0.003$).

Table 1. Characteristics of the selected childcare centres in the Kandy Municipality Council area

Characteristic/ Facility	n (%)
Number of children	
≤ 20	7 (17.5)
21 - 30	16 (40.0)
> 30	17 (42.5)
Registration Status	
Registered	35 (87.5)
Not Registered	5 (12.5)
Management sector	
State	7 (17.5)
NGO	6 (15.0)
Private	27 (67.5)
Fee category†*	
Free	7 (17.5)
$< \text{LKR } 1000$	11 (27.5)
LKR 1000 - 1999	14 (35.0)
$\geq \text{LKR } 2000$	8 (20.0)
First aid facilities	
available	32 (80.0)
not available	8 (20.0)
Routine growth monitoring by the PHMM	
carried out	15 (37.5)
not carried out	25 (62.5)
Facilities for children with special needs	
available	6 (15.0)
not available	34 (85.0)
Provision of meals by the centre	
provided	1 (2.50)
not provided	39 (97.5)
Scheduled activities	
available	38 (95.0)
not available	2 (5.00)
Total	40 (100.0)

† Based on fees from each child per month; * For preschools with day-care facilities, fees charged for the preschool programme are shown

Table 2: Comparison of first-aid facilities and growth monitoring facilities between preschools and preschools with daycare facilities

Category	Preschools n (%)	Preschools with daycare n (%)	Total n (%)	Level of significance
<i>First aid facilities</i>				
yes	17 (85)	15 (75)	32 (80)	$\chi^2 = 0.625, p = 0.346^{\#}$
no	3 (15)	5 (25)	8(20)	
<i>Growth monitoring and maintenance of growth charts</i>				
yes	12 (60)	3 (15)	15 (37.5)	$\chi^2 = 8.64, p = 0.003$
no	8 (40)	17 (85)	25 (62.5)	
Total	20 (100)	20 (100)	40 (100)	

Fisher’s exact value

The quality of the centres

The quality of childcare centres as measured by the ECERS-R and ITERS-R with mean scores for each subscale, overall mean score, and level of quality are given in Table 3. The mean ECERS-R scores for subscale items ranged from 2.82 for programme

structure to 4.08 for interactions, while the mean ITERS-R in the 20 centres with day-care facilities ranged from 3.29 for activities to 4.21 for interactions. According to ECERS-R, 92.5% and according to ITERS-R, 85% of the childcare centres were of ‘inadequate’ or ‘minimal’ quality.

Table 3. Quality of childcare centres as measured by the ECERS-R and ITERS-R: sub-scale scores, overall score, and level of quality

	ECERS-R n = 40	ITERS-R n = 20
<i>Subscale *</i>	<i>mean (SD)</i>	<i>mean (SD)</i>
Space and Furnishings	3.48 (1.08)	3.98 (0.73)
Personal Care Routines	3.72 (1.22)	4.09 (0.86)
Language Reasoning/ Listening and Talking	3.79 (0.97)	3.57 (0.69)
Activities	3.19 (1.02)	3.29 (0.74)
Interactions	4.08 (1.19)	4.21 (0.97)
Programme Structure	2.82 (1.26)	3.37 (1.03)
Provisions for Parents and Staff	3.15 (1.02)	3.73 (0.79)
Overall score*	3.45 (0.91)	3.69 (0.61)
<i>Overall score category</i>	<i>n (%)</i>	<i>n (%)</i>
Inadequate (1.00-2.99)	6 (15.0)	1 (5.0)
minimal (3.00-4.99)	31(77.5)	16 (80.0)
good (5.00-7.00)	3 (7.5)	3 (15.0)
Total	40 (100.0)	20 (100.0)

*Range of the score = 0-7

The items under each subscale for ECERS-R and ITERS-R are given as a supplementary document (Tables S1 and S2 respectively)

When considering the programme structure, the quality of the childcare centres in the study area was inadequate, minimal, and good in 40%, 50%, and 10% of centres respectively, while none belonged to the excellent category. The mean ECERS-R scores for some subscale items under programme structure were

of inadequate quality; “free play time” (mean score = 2.37, SD = 1.37), “group time” (mean score = 2.1, SD = 1.0), and “provisions for the children with special needs” (mean score=1.45, SD=1.09). Of the total sample, 15% (n=6) had children with special needs enrolled with them and out of them, 66% have made

Table 4: Characteristics of the caregivers in selected childcare centres in the Kandy Municipality

Characteristics	n (%)
<i>Age Category</i>	
18 - 25 years	35(27.1)
26 – 40 years	57(44.2)
> 40 years	37(28.7)
<i>Highest Examination passed</i>	
G.C.E. Ordinary Level	29 (22.5)
G.C.E. Advanced level	55 (42.6)
Degree /Diploma	45 (34.9)
<i>Years of Service</i>	
≤ 5 years	67 (52.0)
6 – 10 years	23 (17.8)
> 10 years	39 (30.2)
<i>Salary per month</i>	
< LKR15,000	38 (29.5)
LKR 15,000- 20,000	52 (40.3)
> LKR 20,000	39 (30.2)
<i>Duration of Training[†]</i>	
none	21 (16.3)
<6 months	16 (2.4)
6-12 months	64 (49.6)
>12 months	28 (21.7)
Total	129 (100.0)

score = 1.95, SD = 0.92), was inadequate for this age group. Characteristics of the caregivers are given in Table 4. Of the 129 caregivers, the majority were aged more than 25 years, had passed the G.C.E. Advanced level or had higher qualifications, and had experienced less than 5 years in childcare service. Approximately 16% did not have any training in childcare, while 22% had training for more than a year

Factors associated with quality

As Figure 1.1 depicts, an increasing trend was seen in the mean ECERS-R scores with the increasing fees, which was found to be statistically significant (ANOVA, $F=7.6$, $p<0.001$). A post hoc analysis revealed significant differences between the 'free' category and the 'LKR.1000-1999' and 'LKR.2000' categories ($p=0.012$ and $p=0.001$, respectively), as special provisions for the children with special needs. Under the subscale space and furnishings, adequacy of the gross motor equipment (mean score=2.5, $SD=1.11$), and space available for gross motor activities (mean score=2.55, $SD=1.32$) was of inadequate quality. Most

childcare centres have given less priority to play activities of children between 2½- 5 years.

As measured by the ITERS-R, where infants and toddlers are concerned, more emphasis is given to personal care routines (meals, napping, and diapering/toileting), and the childcare centres with inadequate quality were only 5%, while 55% and 40% were identified as having minimal and good quality personal care routines, respectively. The availability of activities that bring out the holistic growth and development of children, like gross motor (mean score =2.85, $SD=1.1$), fine motor (mean score=2.45, $SD=1.32$), music (mean score=2.45, $SD=1.28$), art (mean score=2.4, $SD=1.1$), and activities with nature (mean

well as between "> LKR 2000" ($p = 0.01$). Figure 1.2 illustrates a decreasing trend in mean ECERS-R scores with the increase in the number of children per caregiver (child: staff ratio) which was statistically significant ($F=6.72$, $p=0.003$). Furthermore, with further analysis, it was found that the difference was statistically significant between the '<7 children per caregiver' category and the '≥13 children per caregiver' category ($p=0.003$).

A significant increase in the mean ECERS-R score was seen (Figure 1.3) when the children were grouped according to age under different caregivers ($t= -4.732$, $df =38$, $p<0.001$). As shown in Figure 1.4, a statistically significant inverse association was observed between the mean ECERS-R score and tenure (years in service) of the caregivers ($F=8.305$, $p<0.001$). It was statistically significant between the '≤ 5 years' category versus '6 – 10 years' and '>10 years' ($p=0.014$ and $p=0.001$ respectively).

Parental satisfaction

Parental satisfaction for various dimensions of care is listed in Table 4 (Table S4 given as an attachment tabulates the parental satisfaction for various dimensions before the five-point scale was dichotomised). The proportions of parents "very satisfied" were low with the following aspects: "parents permitted to drop in at any time" (36.0%); "change in behaviour since he/she started to attend the preschool/day-care" (37.2%); "affordability" (46.5%); and for the "quality of the preschool/day-care" (47.9%).

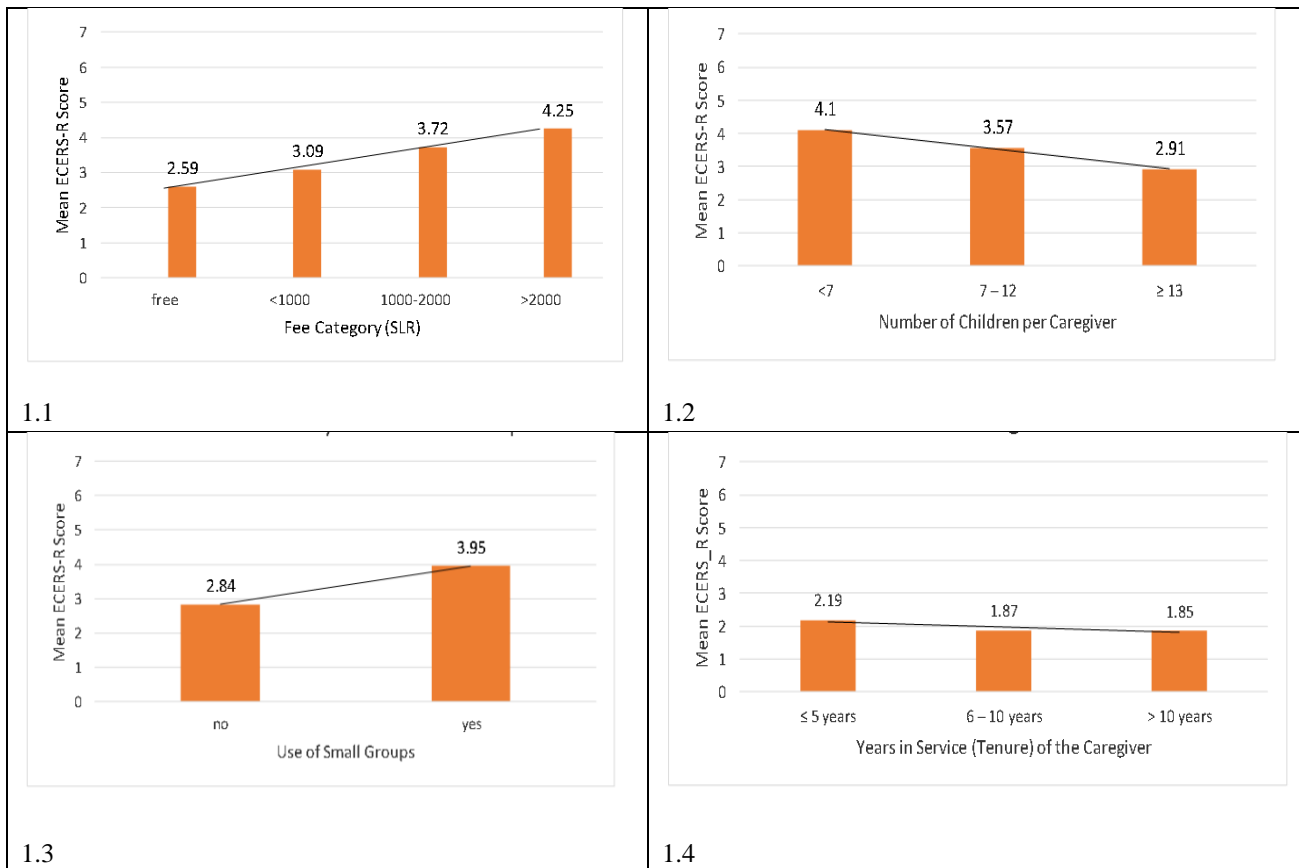


Figure 1: Mean ECERS-R score by fee category (1.1), number of children per caregiver (1.2), use of small groups (1.3), and tenure of the caregiver (1.4)

Discussion

This study, conducted as a part of a larger study, evaluated the quality of childcare in childcare centres within the KMC. Besides a quality assessment by observation of the structure and processes of the childcare centres in the sample, centre, and caregiver characteristics as well as parental satisfaction with the quality of care provided by the childcare centres were evaluated. The key findings were that the quality of the majority of the childcare centres, as measured by the ECERS-R and ITERS-R, was inadequate or minimal. The quality of the childcare centre as measured by the ECERS-R increased with increasing fees, and when the students were grouped into smaller groups according to age. Conversely, the quality of the childcare centre decreased with the increased child-to-caregiver ratio and with the tenure of the caregiver..

Of the 40 childcare centres, 12.5% were not registered with any relevant authority. Similar findings were observed in the Dehiwala–Mount Lavinia Municipality Council (MC) area and in the Colombo MC area, where

13% and 11% of the centres were not registered, respectively[8,9]. As there is no uniformity in the place of registration it is evident that there is a need to identify one particular authority for the function of registration of the childcare centres and that proper monitoring is needed where registration of the childcare centres is concerned. In addition, the system should be supported by legislative enactments and the issuing of licenses too.

The current study revealed problems such as expensive childcare and inadequacy in the availability of services for infant care. It was found that 55% of the studied centres charged more than LKR 1000 per month for the preschool programme. The preschools with daycare facilities charged an additional fee for the children enrolled in their daycare programmes, and the average fee charged per child was LKR. 1650 per month, which shows that the majority of daycare facilities are quite expensive in the study area and probably cater to an affluent segment of the population. Of the total parent sample, 55% were not very satisfied with the

“affordability” of childcare. Thus, there is an urgent need for state-funded or employer-sponsored daycare facilities in the study area. In addition, research can be conducted to find the real cost of preschool services and daycare services as well as parental perspectives on the cost they have to bear additional to the "childcare centre

fee," as this reflects only the tip of the iceberg and excludes other direct and indirect costs like transportation, uniforms, stationery, food, diapers, and additional payments for cultural and religious functions and concert costs.

Table 4: Parent satisfaction with childcare services: very satisfied vs. not very satisfied*

Dimensions of satisfaction		Parent satisfaction	
		Total No (%) n=484 (100)	
		Very satisfied n (%)	Not very satisfied* n (%)
<i>Accessibility</i>	Convenient location	244 (50.4)	240 (49.6)
	Affordable	225 (46.5)	259 (53.5)
<i>Nurturing</i>	Take care of the child properly	316 (65.3)	168 (34.7)
	Healthy and sanitary conditions	253 (52.3)	231 (47.7)
	Safe place	281 (58.1)	203 (41.9)
<i>Activities</i>	Plenty of toys, books, pictures, and music available	246 (50.8)	238 (49.2)
	Planned activities/ schedule	296 (61.2)	188 (38.8)
	Important festivals from child's culture celebrated	324 (66.9)	160 (33.1)
<i>Staff</i>	Caring staff	300 (62.0)	184 (38.0)
	Well-trained staff	291 (60.1)	193 (39.9)
	Staff affectionate towards the child	372 (76.9)	112 (23.1)
	Caregivers are not harsh when handling discipline matters	316 (65.3)	168 (34.7)
<i>The welcoming attitude of the staff</i>	Approachable staff	372 (76.9)	112 (23.1)
	The parent is greeted by the staff	386 (79.8)	98 (20.2)
	The parent is permitted to drop in at any time	174 (36.0)	310 (64.0)
<i>Outcomes</i>	The child enjoys the preschool	289 (59.7)	195 (40.3)
	Well-disciplined children	304 (62.8)	180 (37.2)
	Day-care/preschool recommended to others	242 (50.0)	242 (50.0)
	Change in behaviour since he/ she started to attend this preschool/ day-care	180 (37.2)	304 (62.8)
	Quality of the preschool/ day-care	232 (47.9)	252 (52.1)

* Not very satisfied = satisfied + neither satisfied nor dissatisfied + dissatisfied + very dissatisfied

visiting only the preschools managed by the Municipal Council for regular growth monitoring and all these

It had been shown that children receiving centre-based care are more vulnerable to developing obesity[18]. According to the findings, only 37.5% of the childcare centres were monitoring the growth of the children and maintaining the growth charts. PHMM seem to be

belonged to the ‘preschools only’ category. It is noteworthy that some of the childcare centres were

monitoring the growth of the children and were maintaining their records.

In Sri Lanka, the growth monitoring of preschool-aged children is done at the child welfare clinics run by the respective Medical Officers of Health (MOH) areas. However, when children are enrolled in a childcare centre from two and half years or infancy as is happening nowadays, the new setting for this important endeavour should be childcare centres. On the other hand, the childcare centre administrators have a responsibility over the holistic growth, development, and nutrition and hence the well-being of the children in their care. Accordingly, the guidelines issued by the Children's Secretariat for the child development centres, the childcare centres should liaise with the PHMM to carry out growth monitoring of the children[6]. Moreover, according to the duty list of the PHMM, she is expected to extend her services to the daycare centres but the guidelines for utilisation of childcare centres as a whole (preschools with or without daycare facilities) for the growth monitoring, maintenance of growth charts and follow up of these children is not very clear[19]. Hence taking into consideration the static high levels of malnutrition reported in preschool-aged children in Sri Lanka[20,21], it is obvious that clear guidelines regarding utilization of the childcare centres for growth monitoring/ revision of the Duty list of PHMM as well as a monitoring system for this function are needed.

Quality of the centres

Many studies have shown that good quality childcare improves the child's cognitive and language skills as well as their mathematical skills [7,22-24]. The mean score for the centre quality using ECERS-R in the current study was 3.45 (SD=0.91). Comparatively, the mean values derived for the Dehiwala Mount Lavinia MC area and the Colombo M.C. area were 3.4 (SD=1.1) and 3.58 (SD=0.81), respectively [8,9]. Consequently, there is a close similarity in the mean ECERS-R scores in the three studies, and thus it can be regarded as a reliable measure for quality assessment in childcare centres in similar urban settings in Sri Lanka. In the third assessment of the Dutch childcare quality, the mean ECERS-R score was recorded as 3.0 (SD=0.57), and a reduction in quality was observed compared to the previous two assessments [25]. In comparison, higher quality was demonstrated in the United States of America (USA) using 401 centres,

where the mean ECERS-R score recorded was 4.26[23]. Hence, it is obvious that there is a lot of room for improvement in the childcare centres in Sri Lanka, and that it is important to keep surveillance of the centres to assure the incessant overall holistic quality of care. Some of the potential barriers in this regard are the low financial status of the service providers as well as those who receive childcare, the non-existence of an accreditation system, inadequate research on the area, low priority for the field of ECCD, and lower expectations of the parents.

Similar to previous local [9] and international research[25], the highest score was observed for subscale items under 'interactions'. It's noteworthy that, similar to the study by Herath et al[9], the lowest score with the ECERS-R is for the subscale items under "programme structure". It was noteworthy that provisions for children with disability were highly inadequate in most of the centres.

The centre quality measured as per the ITERS-R (mean =3.69, SD=0.61) was comparatively higher in the study area. A similar observation was noted in the third assessment of the Dutch childcare quality [25]. In par with the findings for ECERS-R, and similar to the findings by Baustad [26], the highest score for ITERS-R was observed for the items under the subscale "interactions."

Factors associated with quality of care

The findings of this study showed that there is a statistically significant increase in the centre quality as measured by the ECERS-R with an increase in the fees ($p < 0.001$). Thus, it can be concluded that good quality childcare as measured by the ECERS-R subscale items costs more in the study area. Thus, deprived children are less likely to access good quality childcare in the study area. In contrast, in the second assessment of the Dutch childcare centres, the quality of care in the subsidised centres was higher than in the private centres [25]. However, the quality of care as measured by both ECERS-R and ITERS-R was higher in the Greek private preschools than in the state-run subsidised childcare centres [27].

Several studies have shown that the quality of childcare centres increases with smaller child-staff ratios[22,25,28-30]. Consistently, the present study revealed that there is a significant increase in the quality of the centres with smaller child-staff ratios ($p < 0.05$). This difference in quality was significant in particular between <7 children per caregiver and >13

children per caregiver. Hence it would be appropriate to recommend that the childcare centres should limit the number of children under one caregiver to 12 or fewer to maintain the quality of care provided by the childcare centres.

In the present study, a significant increment in the quality of childcare centres was seen when the children were grouped according to age ($p < 0.001$), indicating the importance of forming age-based small groups.

Contrary to common belief, a statistically significant inverse relationship was found between the caregivers' years in service (tenure) and the centre quality ($p < 0.001$). There is a possibility that the more senior caregivers are not updated with the current knowledge relevant to the field of ECCD due to inadequate in-service training. Moreover, 'age' may be acting as a confounding factor for this relationship. In the first assessment of Dutch childcare quality (1995), even after controlling for age, a similar finding was revealed and the explanation given by the authors was higher work pressure on the senior caregivers due to longer working hours, inability to cope with unfavourable working conditions and restricted working perspectives, compared to those with lesser experience and work fewer hours. However, in the second assessment in 2001, higher quality was observed in more experienced caregivers as expected [25].

Parent satisfaction with childcare

According to several studies [12-14,31], parents tend to report high levels of satisfaction with their childcare arrangements. Consistently, the present study revealed that the responses to the questions related to satisfaction were overwhelmingly positive. The "very satisfied" percentages were relatively low for the following dimensions of satisfaction: "parent permitted to drop in at any time" (36.1%); "change in behaviour since he/she started to attend the preschool/day-care" (37.2%); "affordability" (46.5%); and for the quality of the preschool/ day-care (47.9%). When grouped under several broad categories, it was evident that the parents were least satisfied with the outcomes of childcare, such as the child enjoying the preschool, the change in behaviour since he/she started to attend the preschool/day-care, and the quality of the preschool/day-care.

Limitations

Although every possible measure was adopted to include all childcare centres, completeness of the sampling frame cannot be assured in the absence of a comprehensive registration system. Due to the limited resources, the study was limited to 40 childcare centres, and a larger sample would increase the statistical power of the significance tests [32]. In the Dutch study involving 42 childcare centres, the authors have been unable to show any relationship between the centre quality and the independent characteristics of the centre, subgroups, and caregiver characteristics which they have partially attributed to the small sample size [25]. The current study findings may not be generalisable to all Sri Lankan childcare centres as the study setting was an urban area. Modification of behaviour in presence of an observer is an inherent constraint of all studies where an observational procedure is used in data collection including the current study. In addition, parental satisfaction with childcare was taken on a 5-point Likert scale. Post-hoc dichotomising of this variable could have led to a loss of information.

Conclusions and recommendations

Registration of childcare centres, facilities for children with special needs, and monitoring of the growth of the children in childcare centres of KMC are inadequate. Overall, the quality of care as measured by ECERS-R and where relevant with ITERS-R was inadequate. A statistically significant increase in the centre quality was seen with the increase in the fees, indicating that good-quality childcare costs more in the study area. A costing study on childcare can be recommended to reveal more insight into this matter. There was a significant increase in the quality of childcare centres with smaller child-to-staff ratios. A significant increment in the quality of childcare centres was seen when the children were grouped according to age. A statistically significant inverse relationship was found between the caregivers' years of service (tenure) and the centre quality. Despite the minimal quality of the majority of the childcare centres, parent satisfaction with the care in the childcare centres was high and almost all expected kindness of the staff, attention to the child, and good training/ education of the staff.

In addition to a system to monitor the activities of the childcare centres, identifying one particular authority for the registration of childcare centres is vital in improving the quality of childcare centres in Sri Lanka. Continuous in-service training programmes to the

childcare providers and staff on age-appropriate stimulation and introducing the concept of “learning through play” for making the scholastically focussed childcare centres more “child friendly”, keeping the number of students under each caregiver to less than 13, grouping the children according to the age, state-funded or employer-sponsored good-quality, utilising the childcare centres for growth monitoring are some of the recommendations that can be made to improve the quality of care.

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Supplement tables

Table S1: Subscale items in the ECERS-R

Table S2: Subscale items in the ITERS-R

Table S3: ECERS-R Score-sheet instructions (Example): Activities- 19. Fine motor

Table S4: Parent Satisfaction with various dimensions of childcare in childcare centres in Kandy Municipal Council area: Results before dichotomising the variables

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Supplementary material

Table S1: Subscale items in the ECERS-R

Space and Furnishings	
1. Indoor space	4. Room arrangement for play
2. Furniture for routine care, play and learning	5. Space for privacy
3. Furnishings for relaxation and comfort	6. Child related display
	7. Space for gross motor play
	8. Gross motor equipment
Personal Care Routines	
9. Greeting/ departing	12. Toileting/ diapering
10. Meals and snacks	13. Health practices
11. Nap/ Rest	14. Safety practices
Language reasoning	
15. Books and pictures	17. Using language to develop reasoning skills
16. Encouraging children to communicate	18. Informal use of language
Activities	
19. Fine motor	24. Dramatic play
20. Art	25. Nature/ science
21. Music/ movement	26. Math/ number
22. Blocks	27. Use of TV, video, and / or computers
23. Sand/ water	28. Promoting acceptance of diversity
Interaction	
29. Supervision of gross motor activities	31. Discipline
30. General supervision of children (other than gross motor)	32. Staff- child interactions
	33. Interactions among children
Programme Structure	
34. Schedule	36. Group time
35. Free play	37. Provisions for children with disability
Provisions for Parents and Staff	
38. Provisions for parents	41. Staff interaction and cooperation
39. Provisions for personal needs of the staff	42. Supervision and evaluation of the staff
40. Provisions for professional needs of the staff	43. Opportunities for professional growth

Table S2: Subscale items in the ITERS-R

Space and Furnishings	
1. Indoor space	3. Furnishings for relaxation and comfort
2. Furniture for routine care, play and learning	4. Room arrangement
	5. Display for children
Personal Care Routines	
6. Greeting/ departing	9. Toileting/ diapering
7. Meals and snacks	10. Health practices
8. Nap/ Rest	11. Safety practices
Listening and Talking	
12. Helping children understand language	13. Helping children use language
	14. Using books
Activities	
15. Fine motor	20. Dramatic play
16. Active physical play	21. Nature/ science
17. Art	22. Blocks
18. Music/ movement	23. Use of TV, video, and / or computers
19. Sand/ water	24. Promoting acceptance of diversity
Interaction	
25. Supervision of gross motor activities	27. Discipline
26. General supervision of children (other than gross motor)	28. Staff- child interactions
	29. Interactions among children
Programme Structure	
30. Schedule	32. Group time
31. Free play	33. Provisions for children with disability
Parents and Staff	
34. Provisions for parents	37. Staff interaction and cooperation
35. Provisions for personal needs of the staff	38. Supervision and evaluation of the staff
36. Provisions for professional needs of the staff	39. Opportunities for professional growth

Table S3: ECERS-R Score-sheet instructions (Example): Activities- 19. Fine motor

1.1 Very few developmentally appropriate fine motor materials accessible for daily use	3.1 Some developmentally appropriate fine motor materials of each type accessible	5.1 Many developmentally appropriate fine motor materials of each type accessible for a substantial portion of the day	7.1 Materials rotated to maintain interest (Ex. Materials that are no longer of interest put away, different materials brought out).
1.2 Fine motor materials generally in poor repair or incomplete (Ex. Puzzles have missing pieces, few pegs for pegboard).	3.2 Most of the materials are in good repair and complete.	5.2 Materials are well organized (Ex. Building toy sets stored separately).	7.2 Containers and accessible storage shelves have labels to encourage self-help (Ex. Pictures or shapes used as labels on containers and shelves; word labels added for older children)
		5.3 Materials on different levels of difficulty accessible (Ex. Both regular and knobbed puzzles for children with varying fine motor skills).	

Example: Scoring sheet

19. Fine motor

1	2	3	4	5	6	7
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Y N Y N Y N Y N

1.1 3.1 5.1 7.1

1.2 3.2 5.2 7.2

5.3

Table S4: Parent Satisfaction with various dimensions of childcare in childcare centres in Kandy Municipal Council area

	Very dissatisfied		Not satisfied		Neither satisfied nor dissatisfied		satisfied		very satisfied		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
Convenient location			11	2.3	34	7.0	195	40.3	244	50.4	484	100
Affordable	3	0.6	15	3.1	40	8.3	201	41.5	225	46.5	484	100
Take care of the child properly	2	.4	3	.6	14	2.9	149	30.8	316	65.3	484	100
Healthy and sanitary conditions	3	.6	18	3.7	44	9.1	166	34.3	253	52.3	484	100
Plenty of toys, books, pictures and music available	1	.2	20	4.1	57	11.8	160	33.1	246	50.8	484	100
Caring staff	1	.2	7	1.4	21	4.3	155	32.0	300	62.0	484	100
Well trained staff			2	.4	25	5.1	166	34.3	291	60.1	484	100
Safe place	3	.6	9	1.9	39	8.1	152	31.4	281	58.1	484	100
child enjoys the preschool	2	0.4	2	.4	45	9.3	146	30.2	289	59.7	484	100
Planned activities/ schedule	2	.4	5	1.0	50	10.3	131	27.1	296	61.2	484	100
Well-disciplined children	3	.6	3	.6	34	7.0	140	28.9	304	62.8	484	100
Approachable staff	1	.2	2	.4	16	3.3	93	19.2	372	76.9	484	100
Parent greeted by the staff			4	.8	8	1.7	86	17.8	386	79.8	484	100
Warmth and affectionate towards child			4	.8	15	3.1	93	19.2	372	76.9	484	100
Caregivers not harsh when handling discipline matters	16	3.3	2	.4	39	8.1	111	22.9	316	65.3	484	100
Parent permitted to drop in at any time	45	9.3	47	9.7	115	23.8	103	21.3	174	36.0	484	100
Important festivals from child's culture celebrated	5	1.0	9	1.9	23	4.8	123	25.4	324	66.9	484	100
Day care/preschool recommended to others	43	8.9	20	4.1	63	13.0	116	24.0	242	50.0	484	100
Change in behaviour since he/ she started to attend this preschool/ day care	16	3.3	2	.4	125	25.8	161	33.3	180	37.2	484	100
Quality of the preschool/ day care as rated by the parent	11	2.3	2	.4	83	17.1	156	32.2	232	47.9	484	100