

**RESEARCH PAPER.**

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**USAGE OF CHILD HEALTH DEVELOPMENT RECORD (CHDR) AMONG MOTHERS TO EVALUATE GROWTH AND DEVELOPMENT OF THEIR CHILDREN IN PRESCHOOL AGES.**

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**ABSTRACT**

A descriptive cross-sectional study was conducted within the immunization clinics of MOH Rikillagaskada, to evaluate knowledge, attitudes, and practices relevant to the Child Health Development Record (CHDR) among mothers with children under five years of age. Employing a systematic random sampling technique, the study enrolled 216 participants, utilizing an interviewer-administered structured questionnaire in three languages. The questionnaire included sociodemographic data, along with information on knowledge, attitudes, and practices associated with growth and developmental milestones included within the CHDR. Results: The findings revealed varied levels of understanding and engagement relevant to CHDR, uncovering notable gaps in knowledge. A positive attitude towards CHDR was observed, though necessary improvements were identified. Practices related to growth and developmental milestones included in the CHDR exhibited a mixed pattern. The study underscores the need for targeted interventions to enhance maternal awareness and optimize the use of CHDR for a comprehensive child health monitoring process. The identified gaps in knowledge, attitudes and practices highlight areas which require focused educational efforts. Health education initiatives should be strategically implemented during clinic visits to bridge knowledge gaps, while behavior change

interventions can enhance positive attitudes towards CHDR. The development and implementation of a review tool within the clinic and ward setup are recommended to analyze and facilitate a good practice related to CHDR. These recommendations aim to improve overall awareness, attitudes, and practices concerning CHDR, fostering its optimal use for the holistic health monitoring of children. The integration of these conclusions and recommendations is crucial for shaping effective strategies for improving child health outcome.

## **INTRODUCTION**

Sri Lanka, classified as a developing nation, has implemented a comprehensive healthcare system that extends free services to its entire population. This healthcare infrastructure is bifurcated into two key domains: patient care services and public health services. Notably, both these essential components are predominantly delivered at the domiciliary level, emphasizing the commitment of the health care system of Sri Lanka to ensure accessible and inclusive healthcare facilities for its citizens. This distinct approach reflects the nation's dedication to address the healthcare needs of its diverse populace and underlines the importance of healthcare accessibility at the grassroots level. In a child's early years, parents play a crucial role in attending to three main primary health factors: growth, development, and disease prevention. Normal growth and development should align with the child's age, and immunization serves as a vital strategy to safeguard against infectious diseases. Should a child's growth and development deviate from the expected milestones, it necessitates thorough investigation, and appropriate interventions should be implemented promptly.

Central to monitoring the growth and development of newborns in Sri Lanka is the Child Health Development Record (CHDR), which serves as the cornerstone of this endeavor. The CHDR, specifically designed to use in Sri Lanka, is a comprehensive tool planned to track and assess the growth, development, and overall health status of infants through the adolescent age. The rational and meticulous use of the CHDR not only enables parents to monitor their child's health status but also serves as an invaluable reference guide for healthcare workers delivering essential services. By employing the CHDR, both parents and healthcare professionals contribute collaboratively to ensure the optimal health and well-being of children, reinforcing its pivotal role in the healthcare system of Sri Lanka.

Introduced to Sri Lanka three decades ago, the Child Health Development Record (CHDR) initially served as a crucial instrument for determining the distribution of 'thripasha' among children who experienced growth retardation. Over time, through strategic amendments

and continuous improvements, the CHDR has evolved into a multifaceted tool with expanded functionalities. Initially designed to address specific nutritional needs, the CHDR has undergone transformative changes, emerging as a comprehensive instrument for monitoring the growth and development of newborns. Beyond its original purpose, the CHDR now functions also as an immunization record, meticulously including a child's vaccination history. Additionally, it serves as a versatile health education material, offering a wealth of information to parents and caregivers.

The maintenance of the Child Health Development Record (CHDR) commences immediately after delivery and the book is provided to mothers from the hospital. In cases of home deliveries, the responsible Public Health Midwife (PHM) of the area ensures the distribution of the CHDR. This essential document comprises two integral parts: Part A is issued to the mother, while Part B is retained with the PHM. Both segments undergo regular updates during visits to the Child Welfare Clinic and field weighing posts. Ensuring widespread knowledge and proficiency in using the CHDR is justifiable, especially in a country with a high literacy level. The readability of the tool and the comprehensibility are paramount, reflecting the expectation that individuals, with a foundation in high literacy, can adeptly navigate and utilize this health tool to promote the well-being and development of the youngest citizens of the country.

## Methodology

Descriptive Cross-sectional Study was conducted among 432 Patients who presented to the immunization clinics at MOH Rikillagaskada. Mothers who are having a child less than 5 years of age were included. Children with congenital abnormalities and mother who can't read and write were excluded from the study. A systematic random sampling technique was applied. An interviewer-administered structured questionnaire was used as the study instrument in all three languages. Then Data entered into computers and analyzed by using standard statistical software. The data collection and entering process were done by the investigators only. No third parties will be involved in the whole process.

## RESULTS

The highest percentage of vaccinations is observed for Encephalitis at 12 months and MMR at 36 months, highlighting a significant focus on this particular immunization milestone. (N=66:22.8%). All eligible vaccination statuses were presented within the study sample. The age range of the participating children was in between 2 months to 60 months duration. (Table 1)

**Table 1. Distribution of vaccine and age of participating children**

Antigen	Age	N (%)
Penta <sub>1</sub> +OPV <sub>1</sub>	2 months	27 (6.2)
Penta <sub>2</sub> +OPV <sub>2</sub>	4 months	9 (2.1)
Penta <sub>3</sub> +OPV <sub>3</sub>	6 months	33 (7.6)
MMR	9 months	53 (12.4)
Encephalitis	12 months	98 (22.8)
DPT+OPV <sub>4</sub>	18 months	89 (20.7)
MMR	36 months	100 (23.1)
DT+OPV <sub>5</sub>	60 months	23 (5.5)
<b>Total</b>		<b>432(100)</b>

The correct knowledge on the growth chart regarding LBW (Low Birth Weight) is 46 (10.6%). The majority of entries in the "Incorrect" category are associated with "Normal" birth weight, with 230 cases (53.2%) (Table 2).

**Table 2: Cross-tabulation of Birth weight and knowledge on the growth chart in CHDR**

		Birth Weight			Total (%)
		LBW	Normal	Overweight	
Knowledge of Growth Chart in CHDR	Correct	46	-	-	<b>46(10.6)</b>
	Incorrect	14	230	142	<b>386(89.4)</b>
	<b>Total (%)</b>	<b>60(13.8)</b>	<b>230(53.2)</b>	<b>142(32.8)</b>	<b>432(100.0)</b>

There are also 14 cases (3.2%) associated with "LBW" and 142 cases (32.8%) associated with "Overweight". The total percentage of correct knowledge on growth charts is 13.8%, indicating a relatively lower awareness level. The predominant area of incorrect knowledge is related to "Normal" birth weight (Table 2).

Correct knowledge is higher for Birth vaccines and Oral vaccines, with percentages of 90.7% and 85.2%, respectively. However, the understanding of 1st-year Vaccinations lags, with only 52.3% having accurate knowledge. All of them had significantly correct knowledge of vaccination at birth, oral vaccines, and vaccination up to five years of age. ( $p < 0.05$ ). However, awareness regarding immunization during the first year of life was not significantly correct ( $p = 0.46$ ). 47.7% of participants had given incorrect answers ( $N = 206$ ). (Table 3)

**Table 3: Distribution of knowledge on immunization of the participants**

Variable	Results	N (%)	X <sup>2</sup> (p-value)
1 <sup>st</sup> -year Vaccinations	Correct	226(52.3%)	.463 (.496)
	Incorrect	206(47.7)	
At Birth vaccines	Correct	392(90.7)	143.4 (<.001)
	Incorrect	40(9.3)	
Oral vaccines	Correct	368(85.2)	106.9 (<.001)
	Incorrect	128(14.8)	
Up to 5 yrs vaccines	Correct	292(67.6)	26.7 (<.001)
	Incorrect	140(32.4)	
<b>Total</b>		<b>432(100.0)</b>	

Correct knowledge about fundamental milestones such as head control is reported by 52.3%, indicating moderate awareness. Sitting without support demonstrates high correct knowledge (90.7%), suggesting a strong understanding of this developmental stage. Similarly, a significant proportion is well-informed about speech development (85.2%). In contrast, breastfeeding and teething show relatively lower correct knowledge percentages, with 67.6% and 67.6%, respectively. All of the participants were able to use CHDR correctly for monitoring their children's growth and development ( $p < 0.05$ ). (Table 4)

**Table 4: Distribution of parents' knowledge on growth and development monitoring of their babies by using CHDR.**

	N (%)	Frequency (%)	X <sup>2</sup> (p value)
<b>Head control</b>	<b>Correct</b>	168(52.3%)	10.6 (.001)
	<b>Incorrect</b>	264(47.7)	
<b>Sit without support</b>	<b>Correct</b>	38(90.7)	146.6 (<.001)
	<b>Incorrect</b>	396(9.3)	
<b>speech</b>	<b>Correct</b>	166(85.2)	11.5 (.001)
	<b>Incorrect</b>	266(14.8)	
<b>Breast Feeding</b>	<b>Correct</b>	306(67.6)	37.5 (<.001)
	<b>Incorrect</b>	126(32.4)	
<b>Teething</b>	<b>Correct</b>	174(67.6)	8.1 (.004)
	<b>Incorrect</b>	129(32.4)	
<b>Total</b>		<b>432(100)</b>	

**Table 5: Distribution of parents' practices directly related to the CHDR.**

Variable	Category	N (%)	X <sup>2</sup> (p-value)
<b>Source of information</b>	PHM	364(84.3)	405.3 (<.001)
	Mass media	12(2.8)	
	parents	13(6.0)	
	self	15(6.9)	
<b>Self-updating of CHDR</b>	Regularly	264(61.1)	174.0 (<.001)
	Randomly	57(26.4)	
	Occasionally	20(4.6)	
	Not marked	34(7.9)	
<b>Frequency of clinic visits</b>	Regularly	24(5.6)	269.4 (<.001)
	Seldom	36(8.3)	
	Occasionally	56(13.0)	
	Once a year	316(73.1)	
<b>Total</b>		<b>432(100.0)</b>	

Public Health Midwives (PHM) emerge as the predominant source of information for the majority of parents, with 84.3% relying on this channel. In contrast, other sources such as Mass media, and parents, and self-contributed to a smaller extent. The X<sup>2</sup> test indicates a highly significant association, underscoring the central role of PHMs in disseminating health-related information. Additionally, a proactive approach is observed in the self-updating of the CHDR, with 61.1% reporting regular updates. The frequency of clinic visits shows a pattern with the majority opting for an annual visit (73.1%)(Table 5).

Introducing key elements of childcare, such as sugar & and salt, toilet training, and building blocks, reveals distinct age-related patterns. The majority introduce sugar & and salt after 12 months (45.4%), while significant proportions opt for introductions at 9-12 months (25.0%) and 6-9 months (15.7%). For toilet training, the most common initiation period is 12-18 months (27.8%), with notable variations at 6-9 months (26.4%) and 9-12 months (19.9%). Building blocks see widespread introduction between 12-18 months (40.7%), with substantial proportions at 9-12 months (22.2%) and 18-24 months (24.5%). The X<sup>2</sup> tests indicate highly significant associations, highlighting the influence of age on parental decisions in introducing these childcare elements (Table 6).

**Table 6: Distribution of parents' practices related to child growth and development which were guided by CHDR**

Variable	Category	N (%)	X <sup>2</sup> (p-value)
<b>Introduction of Sugar &amp; Salt</b>	6-months	60 (13.9)	53.9 (<.001)
	6-9 months	68(15.7)	
	9-12 months	108(25.0)	
	>12 months	206(45.4)	
<b>Toilet Training</b>	6-9 months	114(26.4)	3.14(.369)
	9-12 months	86(19.9)	
	12-18 months	120(27.8)	
	>18 months	56(25.9)	
<b>Introduction of building blocks</b>	9-12 months	96(22.2)	35.5(<.001)
	12-18 months	176(40.7)	
	18-24 months	106(24.5)	
	>24 months	54(12.5)	
<b>Total</b>		<b>432(100)</b>	

## DISCUSSION

A comparative analysis of the present study with prior research reveals noteworthy trends in maternal knowledge concerning the Child Health Development Record (CHDR) in Sri Lanka. While an earlier study by Senevirathne et al. in 2011 demonstrated high maternal knowledge of immunization related to CHDR (97.2%), a critical gap emerged with only 34.1% recognizing the importance of CHDR. In the present study, a nuanced examination of immunization knowledge, specifically regarding vaccination age groups, types, and procedures, uncovered notable strengths, such as a commendable 90.7% understanding at birth and an 85.2% awareness of oral vaccines. However, the overall knowledge of immunization fell below the desired threshold of 70%, suggesting a need for targeted educational interventions.

A separate comparison with Wickramasinghe et al.'s 2008 study highlights a concerning decline in maternal understanding of growth charts within the CHDR framework. While 65% of participants in the earlier study demonstrated clarity on growth monitoring, only 10.6% exhibited a clear understanding of growth charts in the present study, conducted eight years later. Methodological differences, including the comprehensive approach to growth charts

and the consideration of participant demographics in the current study, underscore the importance of nuanced interpretation. The observed decline emphasizes the urgency of tailored interventions to enhance maternal comprehension of growth charts within the CHDR, addressing the potential impact of educational levels on understanding.

The present study reflects a positive shift in the utilization of the Child Health Development Record (CHDR) among participants. A significant percentage (78%) recognize the CHDR as a diet preparation tool, and substantial proportions (65%) acknowledge its role in growth and development assessment. Notably, 68% of mothers actively contribute by entering growth and developmental milestone data into the CHDR. This contrasts with findings from a study conducted a decade ago, where only 35% of participants in the Boralesgamuwa MOH area used the CHDR satisfactorily.

This study acknowledges the global diversity in Child Health Development Records (CHDRs), shaped by varying nutritional and health indicators. The maternal knowledge and understanding of CHDRs also exhibit country-specific variations. Sri Lanka, with its free healthcare system and high literacy rates, suggests a satisfactory level of maternal health education. Notably, socio-cultural factors, where mothers or grandmothers are primary caregivers, significantly influence healthcare practices. The caution is emphasized against comparing CHDR associations between Sri Lankan mothers and those from other countries, highlighting the unique contextual factors and potential errors arising from differing socio-cultural backgrounds. This underscores the need for nuanced consideration of each country's healthcare system and maternal health landscape when interpreting CHDR-related findings.

Despite of sociodemographic characteristics, the study reveals a limited satisfactory knowledge regarding Child Health Development Records (CHDR), with only 10.6% of participants exhibiting such understanding. Notably, all mothers with satisfactory knowledge had children with low birth weight, emphasizing the importance of closely monitoring infants with low birth weight during early childhood. However, 13.8% of mothers with low-birth-weight infants lacked clear understanding, and 32.8% of mothers with high-birth-weight infants lacked correct knowledge regarding the growth monitoring component of the CHDR. This underscores a crucial point: growth monitoring is independent of birth weight, and there is a risk of growth retardation at any age, irrespective of birth weight. Weight, as a direct and simple indicator of physical growth, demands attention, emphasizing the necessity of focusing on weight gain as a fundamental aspect of child health care.



Findings include variations in immunization awareness across different antigens and age groups, with particular attention to Encephalitis and MMR vaccines. Knowledge disparities are evident in growth chart understanding, especially for infants with low birth weight. While correct knowledge is high for certain vaccinations and childcare practices, there are notable gaps, particularly regarding growth monitoring and specific child development milestones. The role of Public Health Midwives is pivotal, constituting the primary source of information for the majority of participants, aligning with their predominant role in rural communities. The study also underscores the need for age-specific childcare education, as seen in variations in practices like introducing sugar and salt across different age groups. The findings collectively emphasize the complexity of maternal knowledge and practices, suggesting the importance of targeted interventions to address specific knowledge gaps and promote comprehensive maternal and child healthcare. The reasons behind that phenomenon should be investigated in detail in future studies.

The study reveals a notable deviation from the national guideline regarding the introduction of sugar and salt to infants, as the majority of participants initiated these introductions much earlier than recommended. A significant portion initiated sugar and salt prematurely, with 29.6% starting within three months of weaning, and only 45.45% adhering to the recommended introduction after the first year. Similarly, early initiation of toilet training, particularly within the first year, was observed among 46.3% of participants. The study suggests the need for targeted interventions to address these practices, especially considering potential maternal involvement and the challenges associated with introducing toilet training in the first year. The paragraph also raises the possibility of involvement from caregivers other than parents, particularly among working mothers, emphasizing the need for more comprehensive investigations beyond the scope of the current study focused on maternal uses of CHDR.

The anticipation of adverse events suggests a potential gap in CHDR's provision of information on immunization and its side effects. The absence of guidance on immunization-related adverse events in CHDR may lead to reliance on unreliable sources. The suggestion is for interventions integrated into child welfare clinics to address this knowledge gap. Furthermore, participants predominantly view CHDR solely as a growth and development monitoring tool, overlooking its comprehensive role in a child's general health needs. This limited perspective raises concerns about potential misuse, particularly for obtaining Thripasha. The paragraph emphasizes the need for a more informed understanding of CHDR's broader purpose and targeted interventions to correct misconceptions surrounding both immunization and the use of CHDR.

The study faces limitations affecting its generalizability and reliability. Despite aiming for a representative sample through random sampling, the actual sample lacked diversity, notably excluding housewives and falling short of anticipated levels. Constraints in time and finances prevented an increase in sample size, thereby limiting the study's generalizability. The data collection method, though reliable due to investigator involvement, used close-ended, multiple-choice questions, restricting participants' expression and additional information collection. The study overlooked the impact of mothers' experience with CHDR on knowledge and practices. Socioeconomic and cultural influences on knowledge, attitudes, and practices were recognized but not explored due to the study design. The study's focus on a specific hospital within the Kandy district raises concerns about broader applicability. The absence of a pilot test limits question practicality and study validity. These limitations should be considered when interpreting and applying the study findings.

## CONCLUSIONS

In conclusion, the study recommends targeted health education interventions during clinic visits conducted by nursing staff to address knowledge gaps regarding the Child Health Development Record (CHDR). Additionally, behavior change interventions led by nursing staff are advised to enhance attitudes toward CHDR and encourage its effective utilization. The study further proposes the development and implementation of a review tool within the clinic and ward setups by nursing offices to systematically analyze practices related to CHDR usage. These recommendations aim to improve overall awareness, attitudes, and practices concerning CHDR, fostering its optimal use for the comprehensive health monitoring of children.

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