Assessing the Knowledge and Practices of Anganwadi Workers Regarding Integrated Child Development Services

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The Integrated Child Development Services (ICDS) scheme plays an important role in improving the health, nutrition, and overall development of children and women in India. *Anganwadi* workers play a pivotal role in delivering the services at the grassroots level in India. The aim of the present study was to assess the knowledge and practices of *Anganwadi* workers in addressing health needs within rural communities. The study was conducted in two blocks of Hisar district in Haryana state. A sample of 100 *Anganwadi* workers was selected randomly by covering 10 villages. The research employed a mixed-methods approach, combining surveys and interviews with *Anganwadi* workers in diverse rural settings. It was found that the majority of *Anganwadi* workers had knowledge of developmental activities (84.40%), immunization (90.00%) and nutritional requirements for pregnant

and lactating women (67.43%) and low knowledge of anthropometric measurements (30.75%). The study also revealed that knowledge was negatively correlated with age and working experience. This assessment helped gauge their capacity to provide accurate information and support to the community. The research findings had practical implications for policymakers, organizations and stakeholders involved in early childhood development and maternal health programs. By studying the profile, facility and knowledge of *Anganwadi* workers, this research contributes to the existing body of knowledge, addressing the strengths, challenges and areas for improvement within the workforce. Ultimately, the aim is to enhance the quality of services provided by *Anganwadi* workers and promote the holistic well-being of children and mothers in the community.

1. INTRODUCTION

The *Anganwadi* workers (AWW) is the community based voluntary frontline worker of the Integrated Child Development Scheme (ICDS) programme. Selected from the community, she assumes a pivotal role due to her close and continuous contact with the beneficiaries (Bhimani et al*., 2020). The output of ICDS scheme is to a great extent dependant on the profile of the key functionary i.e. the AWW, her qualification, experience, skills, attitude, training etc. (Jena, P. 2013). An *Anganwadi* is the focal point for delivery of ICDS services to children and mothers. An *Anganwadi* normally covers a population of 1000 in both rural and urban areas (Patil et al*., 2013;* Gautam et al*.,* 2019). Services at *Anganwadi* centre (AWC) are delivered by an *Anganwadi* worker, who is a part-time honorary worker (Manhas et al., 2012). She is a woman of same locality, chosen by the people, having educational qualification of middle school or matric or even primary level in some areas. She is assisted by a helper who is also a local woman and is paid an honorarium (Kachhot, et al*., 2023; Shukla, P. 2013).

Anganwadi workers have nutritional knowledge, but no correct knowledge and perception for promoting complementary food practices. So, it leads a critical gap between knowledge and practice of complementary feeding (Patel et al*., 2017). *Anganwadi* workers have knowledge about the flattened growth line on growth chart, have correct knowledge about the calories and proteins (Parikh & Sharma, 2011). The *Anganwadi* workers have also knowledge regarding reproductive health and usually it is significantly higher in slums area (Gautam, 2020). So, the aim of this study was to provide an in-depth analysis of their characteristics, resources, and expertise. By examining these aspects, researchers can gain valuable insights into the qualifications, training, responsibilities, and services provided by these dedicated individuals. The *Anganwadi* workers was a fundamental component of this study. It involves understanding the demographic composition, including factors such as age, gender, educational qualifications, job satisfaction and the process of selection within the community (Ghosh et al*., 2022). This examination helps assess the representativeness and diversity of the workforce, ensuring that the needs and cultural nuances of the community are adequately addressed. By providing sufficient information, policymakers can empower *Anganwadi* workers to carry out their responsibilities effectively. The findings from this study hold significant implications for policymakers, researchers and organizations involved in early childhood development and maternal health. By gaining insights into the profile, facility and knowledge of *Anganwadi* workers, stakeholders can make informed decisions to enhance training programs, improve infrastructure and tailor interventions to better meet the needs of the community.

The current study aims to provide a comprehensive understanding of the profile and knowledge of *Anganwadi* workers regarding different development activities, nutrition, immunization and games that needed for different developmental activities. By studying these key aspects, will help in identify strengths, challenges and areas for improvement within the workforce, thereby contributing to the enhancement of early childhood development and maternal health initiatives in India.

2. METHODOLOGY

Locale of the study: The present study was conducted in Haryana.

Selection of Area: Hisar district from Haryana state was purposively selected for the survey.
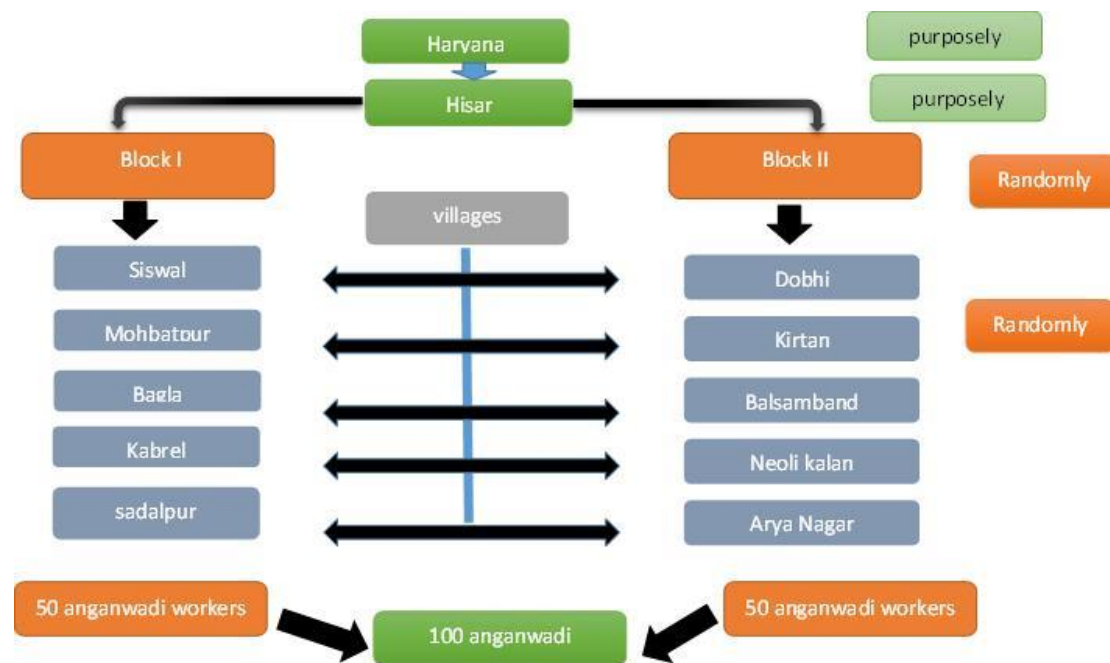
Fig. 1. Sampling procedure of data collection

work due to easy accessibility of the researcher. From selected district two blocks was randomly selected. The block one is *Adampur Mandi* and second is Hisar II. From *Adampur Mandi* five villages were selected name *Siswal, Mhobatpur, Sadlpur, Bagla* and *Kabrel*. From the second block i.e. Hisar II, six villages were selected randomly, namely *Neoli Kalan*, *Dobhi*, *Balsamand*, *Kirtan* and *Arya Nagar*.

Selection of the Respondents: From the selected two blocks, Hisar II (50) and *Adampur* Mandi (50) the total 100 *Anganwadi* workers selected randomly from different villages.

Sampling Procedure: The villages were chosen by random sample, and *Anganwadi* staff were reached by chain technique. Survey and in-depth interview were used to measure knowledge of *Anganwadi* workers in a variety of rural locations to obtain qualitative insights.

3. RESULTS AND DISCUSSION

3.1 Background Profile of the *Anganwadi* Workers

Age of the respondent: Distribution of respondents according to their age showed that 45.00 per cent the respondents belonged to 40-50 years of age group, followed by 30-40 years (27.00%) and 50-60 years (28.00%) respectively.

Marital status: Data about the marital status of respondents revealed that majority (77.00%) were married, 20.00 per cent were widows, 2.00 per cent were divorcee and 1.00 per cent were unmarried at the time of investigation.

Family type and family size: The data clearly showed that 53.00 per cent of the respondents had joint families and 47.00 per cent respondents had nuclear families. Half of the respondents (52.00%) had small families whereas 32.00 per cent had medium and 16.00 per cent respondents had large families.

Education qualification: Data revealed that 38.00 per cent of the respondents were educated up to high school, 30.00 per cent were matriculate, 17.00 per cent were graduate, 9.00 per cent post graduate and only 6.00 per cent up to primary school. The nearby similar study was conducted by Joshi & Verma, (2018) and that conclude that 45.00 per cent of *Anganwadi* workers were educated up to secondary; while 34.00 per cent were educated up to higher secondary and only 3.00 per cent were post graduate.

Caste: The data indicated that 46.00 per cent respondents belonged to general caste, 36.00 per cent from other backward caste and 18.00 per cent from schedule caste.

Income: Income wise distribution showed that 47.00 per cent of the respondent's annual family income was Rs. 1 lac-2 lacs, 33.00 per cent were Rs. 2 lacs-3 lacs and 20.00 per cent were from above Rs. 3 lacs.

Land holding: Twenty-seven per cent respondents had no land and the purpose of join *Anganwadi* is financial benefit, 41.00 per cent had 1 acre to 2.5 acres land holdings, 24.00 per cent had 2.5 acres to 5-acres land holdings and only 8.00 per cent had more than 5-acres land holdings and join *Anganwadi* for interest purpose not for money.

Material possession: Nine per cent of the respondents had low material possession followed by medium material possession

(72.00%) and 19 per cent respondents had high material possession.

Work experience: The respondents had good working experience. Forty-four per cent respondents had 10-20 years of experience. Most of the respondents joined in year 2011 and had more than 10 years of experience. Twenty-seven per cent had 0-10 years of experience, only 2.00 per cent of respondents had 1 year of experience. Seventeen per cent respondents had 30-40 years of experience and 12.00 per cent had 20-30 years of experience. It was found that 42.00 per cent worked between 11-15 years. In the study of Arya et al., (2018) thirty-two per cent worked between 5-10 years and 26.00 per cent had served for more than 15 years. None of them were less than five years of experience which is similar to present study.

Table 1. Background profile of the *Anganwadi* workers (n = 100)

Sr. No.	Variable	Category	f (%)
1.	**Age (years)**	30-40	27(27.00)
		40-50	45(45.00)
		Above 50	28(22.00)
2.	**Marital status**	Married	77(77.00)
		Unmarried	1(1.00)
		Divorced	2(2.00)
		Widowed	20(20.00)
3.	**Family type**	Nuclear	47(47.00)
		Joint	53(53.00)
4.	**Family size**	Small (up to 4 members)	52(52.00)
		Medium (up to 5-6 member)	32(32.00)
		Large (7 and above)	16(16.00)
5.	**Educational qualification**	Primary	6(6.00)
		High school	38(38.00)
		Intermediate	30(30.00)
		Graduate	17(17.00)
		Post graduate	9(9.00)
6.	**Caste**	General	46(46.00)
		OBC	36(36.00)
		SC	18(18.00)
7.	**Income**	1lacs Rs. – 2 lacs Rs.	47(47.00)
		2lacs Rs. – 3 lacs Rs.	33(33.00)
		Above 3lacs Rs.	20(20.00)
8.	**Land holding**	Landless	27(27.00)
		Less than 2.5 acre	41(41.00)
		2.5-5 acre	24(24.00)
		More than 5acre	8(8.00)
9.	**Material possession**	Low (6-10)	9(9.00)
		Medium (11-15)	57(57.00)
		High (15-20)	34(34.00)
10.	**Work experience (in years)**	1-10	27(27.00)
		11-20	44(44.00)
		21-30	12(12.00)
		31-40	17(17.00)

Knowledge assessment of *Anganwadi* workers: The *Anganwadi* workers were perform various activity like carried out development activity for the development and physical growth of the children, anthropological measurement, and immunization process and giving nutritional advice to the pregnant and lactating women. All the respondents (100.00%) possessed basic knowledge regarding physical and language developmental activities and followed by cognitive developmental (85.00%), emotional development (69.00%) and social developmental activities (88.00%). While assessing the knowledge of anthropological measurements it was found that cent per cent respondents possessed knowledge regarding height and weight measurements. Sixteen per cent respondents possess knowledge on waist and hip circumference measurements. Only 9.00 per cent and 5.00 per cent respondents had knowledge about knee height and head circumference measurements respectively. A similar study was conducted by Jadav, (2022) and Parikh & Sharma, (2011) which reported that most of the *Anganwadi* workers had knowledge regarding anthropological measurements but it was found that performance as well as awareness among *Anganwadi* workers regarding the importance of growth charts and growth monitoring was not satisfactory. The other similar study of Kachhot, (2023) conclude that only 17-30 per cent *Anganwadi* workers knew the correct waist and hip circumference for an optimally nourished child aged 2 and 4 years.

Table 2. Knowledge assessment of *Anganwadi* workers (n =100)

Sr. No	Knowledge of Developmental activity	f (%)
1.	Physical developmental activity	100(100.00)
2.	Cognitive developmental activity	85(85.00)
3.	Emotional developmental activity	69(69.00)
4.	Social developmental activity	88(88.00)
5.	language developmental activity	100(100.00)
	Overall	**88.4%**
	Knowledge of anthropological measurements	
1.	Height	100 (100.0)
2.	Weight	100 (100.0)
3.	Waist circumference	16 (16.00)
4.	Hip circumference	16(16.00)
5.	Knee height	9(9.00)
7.	Sitting height	(00.00)
8.	Skinfold thickness	(00.00)
9.	Head circumference	5(5.00)
	Overall	**30.75%**
	Knowledge of *Anganwadi* workers about immunization	
1.	Immunization given during birth of child	99(99.00)
2.	Immunization given during 1-2 month of child	97(97.00)
3.	Immunization given during 2-6 month of child	83(83.00)
4.	Immunization given during 6-12 month of child	83(83.00)
5.	Immunization given during 1-2 years of child	79(79.00)
6.	Immunization given during2-5 year of child	99(99.00)
	Overall	**90%.**
	Knowledge of *Anganwadi* workers about nutritional requirements for pregnant and lactating women	
1.	Iron rich nutrient	83(83.00)
2.	Protein	98(98.00)
3.	Fat	100(100.0)
4.	Calcium	73(73.00)
5.	Vitamin	71(71.00)
6.	Folic acid	34(34.00)
7.	Any other	12(12.00)
	Overall	**67.43%**

The majority of the respondents possessed knowledge regarding immunization during birth of child and immunization given during 2-5 years of child i.e. 99.00 per cent. This is consistent with findings by Sarkar, (2018) who reported that *Anganwadi* workers had better knowledge on immunization. Cent per cent of *Anganwadi* workers maintained records of immunization, health check-ups. The respondents had possessed knowledge of fat rich (100.00%) nutrient sources followed by protein rich nutrient (98.00%), iron rich (83.00%) nutrient sources. Regarding calcium and vitamin respondents had 73.00 per cent and 71.00 per cent of knowledge respectively. Under other aspects they include nutrient like carbohydrates, iodine, sodium, phosphate, magnesium and fatty acid and possessed 12.00 per cent knowledge. Almost similar results were conducted by Bhimani (2020) and revealed that 65.00 per cent *Anganwadi* workers had knowledge about rich sources of calcium.

Anganwadi workers knowledge of various games for different developmental activities of children: The knowledge regarding developmental activities was assessed by carried out physical, cognitive, emotional, language and social developmental games that is needed for the proper development of the children. Various outdoor and indoor games were included for physical development of children. In outdoor games, the *Anganwadi* workers included running (94.00%), tug of war (15.00%), jump rope (47.00%), hide and seek (89.00%), swing the statue (25.00%) and red-light green light, stop! Games (11.00%). The respondents used to involve all children in indoors games like toy playing (100.00%), ludo, snake and ladder (53.00%), exercise (34.00%) and carom and yoga activity (28.00%) for physical development of children. Around half of *Anganwadi* workers had knowledge about the Indoor games (46.86%) and outdoor games (49.33%) that is needed for physical development of children. In cognitive development activities the *Anganwadi* workers carried out puzzle games (78.00%), sudoku (11.00%), clay modelling (69.00%), practice shapes and colors, practice alphabets (75.00%) and identify noise (3.00%). Overall knowledge regarding games related cognitive development activities was 52.80 per cent.

Table 3. Anganwadi workers knowledge of various games for different developmental activities of children (n =100)

Sr. No.	Knowledge of physical developmental activities	f (%)
	Outdoor games	
1.	Running	94(94.00)
2.	Tug of war	15(15.00)
3.	Jump rope	47(47.00)
4.	Hide and sick	89(89.00)
5.	Hopscotch	47(47.00)
6.	Swing the statue	25(25.00)
7.	Red light green light, stop!	11(11.00)
	Overall percentage	**46.86%**
	Indoor games	
1.	Yoga	28(28.00)
2.	Ludo	53(53.00)
3.	Carom	28(28.00)
4.	Snake and ladders	53(53.00)
5.	Exercise	34(34.00)
6.	Playing with toys	100(100.00)
	Overall	**49.33%**.
	Knowledge of cognitive developmental activities	
1.	Puzzle games	78(78.00)
2.	Sudoku	11(11.00)
3.	Clay modelling	69(69.00)
4.	Practice shapes and colours	81(81.00)
5.	Practice alphabets	75(75.00)
6.	Identify noise	3(3.00)
	Overall	**52.83%**.
	Knowledge of emotional developmental activities	

Sr. No.	Knowledge of physical developmental activities	f (%)
1.	Role play	74(74.00)
2.	Puppets	41(41.00)
3.	Drawing	24(24.00)
	Overall	**46.33%**
	Knowledge of language developmental activities	
1.	Story telling	88(88.00)
2.	Rhymes	44(44.00)
3.	Tongue twisters	5(5.00)
4.	Poem	88(88.00)
	Overall	**56.25%**.
	Knowledge of social developmental Activities	
1.	Group games	53(53.00)
2.	Fantasy play	22(22.00)
3.	Creative play	4(4.00)
	overall	**26.33%**.

Table 4. Correlation of independent variable and overall knowledge of *Anganwadi* workers

Sr. No.	Independent variable	Knowledge
1.	Age	-.333**
2.	Education	.287*
3.	Working experiences	-.478**

*** Significant at 0.05 level of significance*
**Significant at 0.01 level of significance*

For the emotional development of children, the *Anganwadi* workers carried out role play (74.00%), puppets (41.00) and drawing (24.00%). The overall knowledge regarding games related to emotional development was 46.33 per cent. The *Anganwadi* workers carried out activities like poem (88.00%) and story-telling (88.00%) followed by rhymes (44.00%), tongue twisters (5.00%) for language development of children. More than half of the *Anganwadi* workers had good knowledge of games related to language development (56.25%). The *Anganwadi* workers was not so much interested in carried out social development activity. Fifty-three per cent of respondents used group games and 22.00 per cent carried fantasy play. Creative play was carried out by only 4 per cent of respondents.

Correlation of independent variable and overall knowledge of *Anganwadi* workers: The data revealed that knowledge was negatively correlated with age and working experience. With increasing age, the knowledge of *Anganwadi* workers were decreasing regarding developmental activity, nutrition knowledge, anthropological measurement etc. With increasing working experience, the knowledge was decreasing. The reason for this was less education and awareness of aged *Anganwadi* workers. This could be the main reason of the knowledge is negatively correlated

with age and working experience. With education the knowledge was positively correlated. As it was justified that with education knowledge of respondent's increase.

Grade-wise differences in mean score (± S.D) distribution of *Anganwadi* workers knowledge: The table represents the differences in the mean knowledge scores (± standard deviation) of *Anganwadi* workers (n = 100) across two blocks, Block I (n = 50) and Block II (n = 50). The knowledge was assessed across four specific domains: developmental activity, anthropological measurement, immunization, and nutritional knowledge, as well as for overall knowledge. In case of developmental activity, the mean knowledge score was slightly higher in Block II (9.58 ± 0.78) compared to Block I (9.24 ± 1.02). However, the difference was not statistically significant (t = 1.866, *p > 0.05*). Comparison regarding knowledge of anthropological measurement showed that *Anganwadi* workers in Block II had a significantly higher mean score (11.70 ± 0.560) compared to those in Block I (11.18 ± 0.561). The difference was statistically significant (t = 2.685, p < 0.01), indicating better knowledge in this domain among workers in Block II. No significant differences were observed in case of immunization knowledge among the two groups. *Anganwadi* workers in Block I demonstrated slightly better nutritional knowledge (10.76 ±

Table 5. Grade-wise differences in mean score (± S.D) distribution of *Anganwadi* workers knowledge (n=100)

Sr. No	Knowledge	Block I (n= 50) Mean ± S.D	Block II (n= 50) Mean ± S.D	t-value
1.	Developmental activity	9.24+1.02	9.58+.78	1.866
2.	Anthropological measurement	11.18+.561	11.70±.560	2.685**
3.	Immunization	11.34±1.00	11.46±1.16	0.552
4.	Nutritional knowledge	10.76±1.20	10.28±1.19	1.999*
	Overall knowledge	40.52±2.4	41±02±3.24	8.74**

*** Significant at 0.05 level of significance*
**Significant at 0.01 level of significance*

1.20) compared to Block II (10.28 ± 1.19). This difference was statistically significant (t = 1.999, *p < 0.05*), suggesting better performance by Block I in this domain. In case of overall knowledge Block II (41±02±3.24) was significantly (t = 8.74, p < 0.01) ahead of Block I (40.52±2.4) highlighting that workers from Block II possess better knowledge than Block I workers.

4. CONCLUSION

Assessing the knowledge and practices of *Anganwadi* Workers (AWWs) concerning Integrated Child Development Services (ICDS) is essential for enhancing the effectiveness of maternal and child health initiatives. Majority of respondents demonstrated knowledge of developmental activities, indicating a strong foundational understanding of early childhood growth. The *Anganwadi* worker was also knowledge about the measurements of height and weight, as well as the nutrients that nursing and pregnant women. However, knowledge of more specific anthropological indicators like waist-hip ratio, knee height and head circumference were significantly lower. This gap highlights a need for enhanced training and capacity-building programs focused on comprehensive growth assessment techniques. *Anganwadi* workers possessed moderate knowledge of various games essential for the developmental activities of children. The study found a negative correlation between the age and work experience of *Anganwadi* workers and their overall knowledge, indicating that as age and experience increased, knowledge levels tended to decrease. This may be due to lower educational qualifications and limited exposure to updated training among older workers. These findings highlight the importance of continuous education and training, especially for senior *Anganwadi* workers, to maintain and enhance their effectiveness in early childhood care. The grade-wise comparison of *Anganwadi* workers'

knowledge revealed differences between Block I and Block II. Block II workers demonstrated significantly higher knowledge in anthropological measurements and overall knowledge scores. In contrast, Block I workers performed slightly better in nutritional knowledge, with a statistically significant difference. These findings suggest that although there are strengths in both blocks.

5. RECOMMENDATIONS

- Structured training programs be organized for *Anganwadi* workers to update their knowledge, particularly in areas like advanced anthropometric measurements such as waist-hip ratio, knee height, and head circumference.
- Special attention should be given to senior and more experienced workers through tailored training approaches that address their learning pace and prior educational background.
- Strengthening the understanding of emotional and social development activities through game-based learning can significantly enhance the workers' ability to foster holistic child development.
- Continuous monitoring and feedback mechanisms should be implemented to ensure effective application of training in the field.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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