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Evaluation of Health Care Workers' Knowledge about Integrated Management of Neonate and Child Health Program in Najaf Governorate/Iraq

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ABSTRACT

Background: *Every year, more than 6 million young children are unfortunately lost in countries that are still developing due to curable or treatable diseases such as diarrhea and pneumonia. The Integrated Management of Neonatal and Child Health (IMNCH) program was introduced by the World Health Organization (WHO) in 1992. This program was meant to empower healthcare staff with the right tools to deal with the top causes leading to childhood death and illness.* ***Methods****: A research of cross-sectional descriptive study was carried out in 26 primary healthcare centers located in 6 districts of Najaf Governorate, using the method of simple random sampling technique. The research study includes 111 primary healthcare workers. A questionnaire was used to evaluate the Integrated Management of Neonatal and Child Health knowledge of healthcare workers. Data collection from December 31, 2023, to the of March 31, 2024.* ***Results****: The study revealed a significant level of high knowledge among healthcare workers. Additionally, a statistically significant link was observed between the healthcare workers' place of residence and their knowledge ($P < 0.05$), suggesting that individuals living in urban regions have higher levels of knowledge compared to those residing in rural areas.* **Conclusion:** *Healthcare workers showed a high level of knowledge regarding IMNCH information, and the knowledge was strongly related to the healthcare worker's residences place and years of experience.*

Keywords: Primary health care, Integrated, Management, Neonate, Child.

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INTRODUCTION

The Pan American Health Organization (PAHO) World Health Organization and UNICEF created the IMCI strategy in the mid-1990s to enhance the health condition of children globally, it encompasses activities aimed at diminishing childhood mortality rates both in medical facilities and residential settings, It provides a thorough explanation of how common newborn and childhood illnesses are managed (Aneja, 2019). A child survival method IMNCH was introduced in 1995, IMNCH continues to be the mainstay of child survival tactics and the enhancement of the standard of care given to unwell children in medical facilities across more than 100 nations (Abebe et al., 2019; Carai et al., 2019).

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Every year, around 10 million children under five worldwide died due to respiratory infection (Strong et al., 2021).

The core principles of the IMNCH are the education of healthcare professionals, the provision of necessary tools, the development of skills for handling children with co-occurring illnesses, and the provision of necessities such as urogenital referrals, suitable treatment, and career guidance, this employee has to be monitored by an IMNCH supervisor following training to support them at work (Kilov et al., 2021; Tawfiq et al., 2020) .

The benefit of community and family practices in IMNCH implementation is to maximize the impact of the IMNCH implementation strategy (Mnanzana, 2020).

Aim of study

To evaluate health workers' knowledge regarding Integrated Management of Neonatal and Child Health (IMNCH) program in primary healthcare centers Najaf Governorate.

METHODS

Subjects and Methods

This study was a descriptive, cross-sectional investigation conducted at 26 randomly selected Primary Health Centers in the governorate of Najaf. Najaf possesses a total of 52 primary health care centers, which are distributed among six primary health care sectors. Select 26 centers, which represents 50% of the total, from all sectors using a selected (simple sample) process.

Data collection technique: The data were gathered through a questionnaire that was developed using information from the Guide to IMNCH Program of the Iraqi Ministry of Health and the WHO. The questionnaire was also reviewed and approved by experts. Additionally, the knowledge of healthcare workers who are directly involved with the IMNCH unit within the health center was measured.

Statistical Analysis: The data analysis was conducted using SPSS-26, which stands for Statistical Packages for Social Sciences, version 26. The data were presented using basic statistical measures such as percentage, frequency, standard deviation, and mean.

Study population: The population comprises all healthcare professionals, regardless of gender, who are employed in IMNCH units. The healthcare worker sample size consisted of 111, while the children sample size was 378, these sample sizes of children used to evaluate the performance of healthcare workers, the sample size was determined based on the attached equation in order to determine the appropriate sample size (Thompson, 2012).

Sample size calculator:

$$n = \frac{N \times p(1-p)}{\left[[N-1 \times (d^2 \div z^2)] + p(1-p)\right]}$$

Where: p: Probability (50%), n: Sample size z: Correlation level at 95% (1.96), N: Population size, d: Error proportion (0.05).

The selection of this convenience sample adhered to specific criteria outlined as follows:

Inclusion criteria

HealthCare workers (both gender and all age groups) who work in the IMNCH unit in the healthcare center where verbal consent was taken and the purpose of the study was clarified.

Exclusion criteria

1. Staff who refused the interview.
2. All healthcare workers who did not have an administrative order to work in the IMNCH unit.

Scoring system: Assessment of the knowledge of Health care workers in table (3.2) found the final assessment for questions according to a 3-point Likert scale scoring system was used for each question in all six domains ranging from 1 (Disagree), 2 (Neutral) to 3 (Agree) and according to the mean of the score for each question.

Table (1): 3-Point Likert Scale.

3-Point Likert Scale	
Assessment	**Assessment**
High	**High**
Moderate	**Moderate**
Low	**Low**

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RESULTS

Sociodemographic characteristics of healthcare workers

The following Tab.2 provides a summary of the study group's characteristics, indicating that 36% of the workers were aged between 25 and 30. Regarding the residents, almost all of the respondents resided in towns and cities, accounting for 91% of the participants. Furthermore, more than half of the participants, specifically 54.1%, obtained a degree of diploma. The majority of healthcare workers in the IMNCH unit in healthcare centers in Najaf governorate are female, comprising 82.9% of the workforce, while males make up 17.1%. Most of the health worker have participation in the training program on IMNCH with percentage of 72.1. The majority of health workers in the IMNCH are married, accounting for 64.9% of the total. Regarding the years of experience, most healthcare have served from (1-5) years with percentage (31.5). Other lower percentages were found in periods which include (8.1%) for both (10-15) years as well as (20 years and above) and (5.4%) for (15-20) years. Regarding the specializations of the healthcare workers in the healthcare centers we found that most of them were nurses' specializations, with a percentage of 39.6%. Most of the health workers have years of experience (1<) in the IMNCH units with a percentage of (46.8%).

Knowledge about general examination

The data in Tab.3 presents the assessment of healthcare workers at health facilities, Weighted average of section 1 was (2.433 ± 0.682) which indicates the trend of (Knowledge about general examination) The general trend indicates a high level, as measured by a 3-point Likert scale, with a value of 2.433 falling within the range of 2.24-3.00. Our findings indicate that the majority of healthcare workers show a high level of expertise regarding general examination.

Knowledge about Diarrhea

The information in Tab.4 presented the assessment of healthcare workers in health centers, revealing the weighted mean of section 2 was calculated to be 2.31 ± 0.637. This indicates that the trend of knowledge relating to diarrhea is generally strong, based on a 3-point Likert scale. The value of 2.31 falls within the interval of 2.24-3.00. The majority of healthcare workers exhibited a high level of understanding in general examination

Knowledge about Nutrition assessment

The evaluation of healthcare workers in health centers was presented in Tab.5 , Weighted mean of section 4 was (2.26±0.741) which indicate the trend of (Knowledge about Nutrition assessment) is high as a general trend according to 3-point Likert scale since 2.26 lie in the interval 2.24-3.00. The most of healthcare workers have high knowledge about general examinations.

Knowledge about Immunization

The assessment of healthcare workers in health centers is presented in Tab.6, the weighted average of section 5 was 2.41, which indicates a high level of knowledge of immunization based on the overall trend according to a 3-point Likert scale. This is because 2.41 falls within the range of 2.24-3.00. The majority of healthcare practitioners has extensive understanding with respect to Immunization.

Relationship of Overall Knowledge with Sociodemographic Characteristics.

The data in Tab.7 displayed the correlation between demographic characteristics and the occurrence of knowledge levels in the healthcare workers studied. The investigation indicated that there is not a statistically significant association with age group, gender, marital state, educational levels and specialization. When it comes to the IMNCH Train, the findings indicate that a significantly greater proportion, 36.9%, of healthcare workers who received training possess a high level of knowledge compared to those who did not receive training, with just 6.3% exhibiting good knowledge. A statistically significant difference was observed with a P value of 0.022. Considering years of experience, the findings indicate that a greater proportion of healthcare workers (18.0%) with 1-5 years of experience had strong knowledge compared to those with other levels of experience (<1, 5-10, 10-15, 15-20, >20), which have percentages of (3.6%, 9.9%, 5.4%, 0.9%, 5.4%) respectively, a statistically significant difference was observed,

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with a p-value of 0.022. Regarding the years of experience in IMCNH, the findings indicate that a greater proportion, namely 25.2%, of healthcare workers with 1-5 years of experience possess good knowledge compared to those with other levels of experience (<1, 5-10, 10-15, 15-20), which have percentages of (12.6%, 5.4%, 0.9%, and 0.9%) respectively. The observed difference was determined to be statistically significant with a p-value of 0.03.

Table (2): characteristics of Health Care workers (HCWs).

variables (N=111)		F	%
Gender	Male	19	17.1%
	Female	92	82.9%
	Total	111	100.0%
Age group	20-25	36	32.4%
	25-30	40	36%
	30-35	15	13.5%
	35-40	4	3.6%
	40-45	4	3.6%
	>45	12	10.8%
	Total	111	100.0%
Residence	Urban	101	91.0%
	Rural	10	9.0%
	Total	111	100.0%
Marital status	Married	72	64.9%
	Single	38	34.2%
	Divorce	1	0.9%
	Total	111	100.0%
Educational levels	Preparatory	23	20.7%
	Diploma	60	54.1%
	Bachelor s	26	23.4%
	Master s	2	1.8%
	Total	111	100.0%
Occupation	Medical technology	14	12.6%
	Nurse	44	39.6%
	Medical assistant	38	34.2%
	others	15	13.5%
	Total	111	100.0%
IMNCH Training	Yes	80	72.1%
	No	31	27.9%
	Total	111	100.0%
Years of experience in IMNCH	<1	52	46.8%
	1-5	44	39.6%
	5-10	10	9.0%
	10-15	3	2.7%
	15-20	2	1.8%
	Total	111	100.0%

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Table (3): Knowledge about general examination.

Items		Agree	Neutral	Disagree	%	Mean	Std. Deviation	Rank	Direct of sample
Does the temperature measured by placing an electronic thermometer under the armpit for one minute and adding half a degree?	N	84	0	27	84%	2.51	0.862	3	agree
	%	76%	0%	24%					
When measuring the child's weight, subtract 500 grams from the registered weight (clothing weight).	N	67	6	38	75%	2.26	0.941	5	agree
	%	60%	5%	34%					
Does the normal weight of a child at birth between 2.5 - 3.5 kg?	N	106	2	3	98%	2.93	0.349	1	agree
	%	96%	2%	3%					
Does a child (3-6 months) have a head circumference that increases at a rate of 1 cm per month?	N	61	37	13	81%	2.43	0.696	4	agree
	%	55%	33%	12%					
The normal temperature for a baby is 38 degrees or more	N	4	2	105	97%	2.91	0.3994	2	disagree
	%	5%	2%	93%					
Does a child in the first year have to be their number of visits 4 at a minimum?	N	75	10	26	52%	1.56	0.849	6	agree
	%	68%	9%	23%					
weighted mean						2.433			high
Std. Deviation							0.682		

*"3-Point Likert Scale (low range (1.00-1.66), moderate range (1.67-2.23), high range (2.24-3.00))

Table (4): Knowledge about Diarrhea.

Items		Agree	Neutral	Disagree	%	Mean	Std. Deviation	Rank	Direct of sample
Does dehydration the most serious complication of diarrhea that threatens a child's life?	N	97	10	4	95%	2.84	0.458	2	Agree
	%	86%	9%	4%					
Are some of the signs of a child suffering from severe dehydration (sunken eyes, dizziness, inability to drink, skin folds returning very slowly)?	N	95	8	8	93%	2.78	0.563	3	Agree
	%	84%	7%	7%					
Does the mother given one sachet of oral rehydration salts when she returns home to complete the treatment of the child with diarrhea?	N	11	10	90	43%	1.29	0.638	7	disagree
	%	10%	9%	80%					
Treatment diarrhea with severe dehydration is plan - C -	N	81	24	6	89%	2.68	0.575	4	Agree
	%	72%	21%	5%					
To prepare oral rehydration salts, you must use 1 liter (5 cups with a	N	99	7	5	95%	2.85	0.471	1	Agree
	%	88%	6%	4%					

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Items		Agree	Neutral	Disagree	%	Mean	Std. Deviation	Rank	Direct of sample
capacity of 200 ml) clean, safe water.									
Treatment diarrhea with some dehydration a plan - A -	N	27	12	72	80%	2.41	0.857	5	disagree
	%	24%	11%	64%					
Does the child classified as having persistent diarrhea if the duration is 7 days?	N	54	19	38	62%	1.86	0.903	6	Agree
	%	48%	17%	34%					
weighted mean					2.31				high
Std. Deviation							0.637		

*"3-Point Likert Scale (low range (1.00-1.66), moderate range (1.67-2.23), high range (2.24-3.00))"

Table (5): Knowledge about Nutrition assessment.

Items		Agree	Neutral	Disagree	%	Mean	Std. Deviation	Rank	Direct of sample
Can you give a little water to a child (6 months and under) who is exclusively breastfed in the summer?	N	17	3	91	44%	1.33	0.730	7	disagree
	%	15%	3%	82%					
Increasing fluids is one of the three basic pieces of advice a health worker should give the mother to any sick children	N	82	15	14	87%	2.61	0.703	4	agree
	%	74%	14%	13%					
The number of times breastfeeding is a minimum of 8 times within 24 hours under 6 months	N	88	7	16	88%	2.65	0.722	2	agree
	%	79%	6%	14%					
Does a child classified as stunted if his height for age is -2 or less for the z score?	N	98	4	9	93%	2.80	0.730	1	agree
	%	8%	4%	88%					
The appropriate age to start complementary foods is before 6 months of age.	N	17	3	91	89%	2.67	0.767	6	disagree
	%	15%	3%	82%					
The right time to start breastfeeding is within half an hour after giving birth	N	85	7	19	47%	1.41	0.805	5	agree
	%	77%	6%	17%					
Does the child classified as “emaciated” if the weight for height is (-1) or less for the z-score?	N	22	4	85	48%	1.43	0.736	3	disagree
	%	20%	4%	77%					
weighted mean					2.26				moderate
Std. Deviation							0.741		

*"3-Point Likert Scale (low range (1.00-1.66), moderate range (1.67-2.23), high range (2.24-3.00))"

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Table (6): Knowledge about Immunization.

Items		Agree	Neutral	Disagree	%	Mean	Std. Deviation	Rank	Direct of sample
Does vitamin A 200,000 IU given to children when they start enrolling in schools?	N	88	6	17	88%	2.64	0.736	4	agree
	%	79%	5%	15%					
Does the BCG vaccine given in the first week of birth, and is it not recommended to be given after the age of one year?	N	105	1	5	97%	2.90	0.425	1	agree
	%	95%	1%	5%					
Does the measles vaccine given as a single dose in the routine schedule at nine months of age?	N	89	9	13	89%	2.68	0.674	3	agree
	%	80%	8%	12%					
Does the MMR vaccine given in the routine schedule in two doses, the first dose at the age of 12 months and the second dose at the age of 18 months?	N	84	12	15	87%	2.62	0.714	5	agree
	%	76%	11%	14%					
The vaccination date is postponed when the child's temperature is more than 38.5°C	N	102	4	5	96%	2.87	0.450	2	agree
	%	92%	4%	5%					
Does the triple vaccine consist of (diphtheria + acellular pertussis + tetanus)	N	73	27	11	85%	2.56	0.670	6	agree
	%	66%	24%	10%					
If the child suffers from jaundice, the vaccine is not given	N	80	7	24	50%	1.50	0.830	9	disagree
	%	72%	6%	22%					
Does the first dose of tetanus toxoid given in the fifth month of pregnancy?	N	45	17	49	68%	2.04	0.924	7	neutral
	%	41%	15%	44%					
Does the pneumococcal vaccine given in only two doses during the first year?	N	45	25	41	65%	1.96	0.883	8	neutral
	%	41%	23%	37%					
weighted mean					2.41				high
Std. Deviation					0.700				

*"3-Point Likert Scale (low range (1.00-1.66), moderate range (1.67-2.23), high range (2.24-3.00))"

Table (7): Relationship of Overall Knowledge with Sociodemographic Characteristics.

Variable		Rating						Chi-square ($\chi 2$)	P Value >0.05
		Agree		Neutral		Disagree			
		F	%	F	%	F	%		
Age group	20-25	16	14.4%	19	17.1%	1	0.9%	7.608	0.667
	25-30	14	12.6%	25	22.5%	1	0.9%		
	30-35	5	4.5%	10	9.0%	0	0.0%		
	35-40	2	1.8%	2	1.8%	0	0.0%		

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Variable		Rating						Chi-square ($\chi 2$)	P Value >0.05
		Agree		Neutral		Disagree			
		F	%	F	%	F	%		
	40-45	2	1.8%	2	1.8%	0	0.0%		
	>45	9	8.1%	3	2.7%	0	0.0%		
	total	48	43.20%	61	54.90%	2	1.80%		
Gender	Male	8	7.2%	10	9.0%	1	0.9%	1.554	0.46
	Female	40	36.0%	51	45.9%	1	0.9%		
	total	48	43.3%	61	54.9%	4	1.8%		
Habitat	City	46	41.4%	54	48.6%	1	0.9%	5.925	0.05
	Rural	2	1.8%	7	6.3%	1	0.9%		
	total	48	43.2%	61	55%	2	1.8%		
Marital state	Married	35	31.5%	36	32.4%	1	0.9%	3.1017	0.55
	Single	13	11.7%	24	21.6%	1	0.9%		
	Divorce	0	0.0%	1	0.9%	0	0.0%		
	total	48	43.2%	61	55%	2	1.8%		
Educational levels	Preparatory	8	7.2%	15	13.5%	0	0.0%	2.769	0.837
	Diploma	27	24.3%	31	27.9%	2	1.8%		
	Bachelor s	12	10.8%	14	12.6%	0	0.0%		
	Master s	1	0.9%	1	0.9%	0	0.0%		
	total	48	43.2%	61	55%	2	1.8%		
Specialization	Medical technology	7	6.3%	7	6.3%	0	0.0%	1.052	0.984
	Nurse	19	17.1%	24	21.6%	1	0.9%		
	Medical assistant	16	14.4%	21	18.9%	1	0.9%		
	others	6	5.4%	9	8.1%	0	0.0%		
	total	48	43.2%	61	55%	2	1.8%		
IMNCH Train	Yes	41	36.9%	38	34.2%	1	0.9%	7.628	0.022
	No	7	6.3%	23	20.7%	1	0.9%		
	total	48	43.2%	61	55%	2	1.8%		
years of experience in IMNCH	<1	14	12.6%	36	32.4%	2	1.8%	17.01	0.03
	1-5	28	25.2%	7	6.3%	9	8.1%		
	5-10	6	5.4%	2	1.8%	2	1.8%		
	10-15	1	0.9%	1	0.9%	1	0.9%		
	15-20	1	0.9%	0	0.0%	1	0.9%		
	total	50	45%	46	41.4%	15	13.6%		

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DISCUSSION

The Tab.2 displayed that 36% of the workers were aged between 25 and 30. These findings indicate that a majority of the healthcare workers in Al-Najaf are in their early stages of their careers and have recently been hired. Our findings aligns with a study conducted in Egypt, which found that a significant majority of 37.8% of healthcare workers were between the ages of 20 and 29 (ME-HI et al., 2018) may be this demonstrates that the majority of Al-Najaf's primary healthcare workers are youthful and recent hires. And we found that healthcare workers living in town was 91% and who had diploma degree was 54%, the findings of our study align with a research conducted in Erbil City, Iraq, which revealed that 89% of health care workers are living in towns and cities and 56% of the selected sample already have a diploma degree. (Qadir, 2016) The majority of healthcare workers in the IMNCH unit in healthcare centers in Najaf governorate are female, comprising 82.9% of the workforce, while males make up 17.1%, this may be due to the IMNCH unit in Al-Najaf governorate mostly provides to women who bring their children to the health center, and it's easier for female health care workers to handle such cases, considering the sociocultural characteristics of the region. These findings are in line with the results of a similar study conducted in Nigeria, which revealed that female healthcare workers outnumbered men in the field (Ogunyemi & Odusanya, 2016) . Most of the health worker have participation in the training program on IMNCH with percentage of 72.1,it is possible that the reason for this percentage is due to the continuous training by the public health department in the governorate, and according to training percentage these results are consistent with the study conducted in primary healthcare centers in Babylon Governorate which found that the percentage of health workers in the IMNCH unit who are trained in IMNCH is about 76.2% (Hussein & Farhood, 2019). Regarding the specializations of the healthcare workers in the healthcare centers we found that most of them were nurses, with a percentage of 39.6%, the reason for this is that the majority of healthcare workers in the main healthcare facilities, specifically nurses, are required to work in healthcare centers as per the guidelines of the Al-Najaf Health Department. These findings contradicted the study conducted by Abd-Alabass et al (2021), which examined the assessment of healthcare professionals' understanding of immunity and vaccination. The study indicated that the majority of healthcare workers in selected Primary Health Centers (PHCs) in Al-Hilla city were medical assistants, accounting for 27.6% of the total (Abd-Alabass & Faraj, 2021). The weighted average from Tab.6 was 2.41±0.700, which indicates a high level of knowledge of immunization based on the overall trend according to a 3-point Likert scale. This is because 2.41 falls within the range of 2.24-3.00. The majority of healthcare practitioners has extensive understanding with respect to Immunization, and found these findings agreed with another study in Iraq that Assessment of Knowledge About the Number of Doses Recommended for Routine Vaccines in The National Schedule and The Interval Between Doses is high (2.52± 0.45) (Qanbar et al., 2023). The data shown in Tab.7 indicates that there is no statistically significant difference between knowledge and age group, a study was undertaken that aligns with the recent findings for the age group in Amara City / Iraq. (2020) Assessment of Nurses knowledge regarding IMCI at Primary Health Care Centers in Al-Amara City, The study revealed a no significant between the level of knowledge among healthcare workers about IMNCH and their age group (Sharhan & Ma'ala, 2021) .Another study

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disagree with our findings was undertaken in primary healthcare centers in Babylon Governorate (2019) that found there is a relationship between the knowledge of health care workers and their age group (Hussein & Farhood, 2019).Our research revealed that the number of females exceeded the number of males, and there were no significant differences between knowledge and gender. This observation aligns with a previous study. (Sharhan & Ma'ala, 2021) There was no statistically significant correlation found between gender and knowledge relevant to IMCI..Our results displayed that the educational levels was more in diploma with 24% and there were no significant differences between knowledge and educational levels and this study disagree which another study (Sharhan & Ma'ala, 2021)that showed that there was significant differences between knowledge and educational levels .Our data indicated that the highest percentage of years of experience was in the range of 1-5 years, accounting for 18%. Furthermore, we observed significant differences between years of experience and knowledge. Importantly, our findings contradict the results of a previous study (Adekanye & Odetola, 2014) that showed years of experience of healthcare workers in IMNCH unit had little or no influence on their knowledge of IMCI, and another previous study disagreement in Babylon Governorate (Hussein & Farhood, 2019) that showed that years of experiences of healthcare worker had a relationship with the knowledge of IMNCH .Our results displayed that the IMNCH train was more in healthcare workers who was train in IMNCH program with 41% and there were a significant differences between knowledge and IMNCH train and this study disagree which previous study (KAMYA, 2019) that showed the training of healthcare worker on IMNCH program had no relationship with knowledge of IMNCH , another previous study had an agreement with our findings (Hussein & Farhood, 2019) that there was a statically significant between knowledge and IMNCH train.

CONCLUSION

Healthcare workers possess extensive understanding of IMNCH information due to their familiarity with the complete program guide. Healthcare workers residing in cities possess more experience compared to those who is living in rural areas.

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