INADEQUATE KNOWLEDGE OF IMCI INTERVENTION STRATEGY AMONG HEALTHCARE PROVIDERS IN PORT HARCOURT PRIMARY HEALTHCARE CENTRES, NIGERIA

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Article Info

Abstract

The Integrated Management of Childhood Illness (IMCI) intervention strategy developed by the World Health Organization in 1992 was established to guide assessment, classification, treatment, and follow-up procedures of sick children. The aim of this study was to examine the knowledge of IMCI intervention strategy amongst trained and untrained healthcare providers working in Port Harcourt primary healthcare centres in Nigeria. A cross-sectional study was conducted with a novel structured questionnaire administered to 52 nurses, 12 of whom received IMCI training and 40 did not. Results revealed that both trained and untrained healthcare providers demonstrated inadequate knowledge of IMCI, with no significant difference in knowledge between the groups. The study recommends periodic IMCI re-fresher training coupled with mentorship and supervision for healthcare providers to improve the effectiveness of the IMCI intervention strategy.

1.0 Introduction

About ten million children under five years old die yearly in low and middle-income nations from malaria, pneumonia, diarrhea, measles, and malnutrition (Meno, Makhado & Matsipane, 2019). In a bid to reduce the global impact of childhood diseases, the World Health Organization developed and adopted the Integrated Management of Childhood Illness (IMCI) strategy in 1992 (UNICEF, 2016). The IMCI was developed to be a standardized tool for use by nurses and midwives in primary healthcare settings (Kalu, Lufesi, Havens & Mortimer, 2016). It is an algorithm or clinical protocol that guides the nurse-midwife through assessment, classification, identification of required treatment, treatment, counseling, and follow-up (Tshivhase, Madumo & Govender, 2020). The algorithm helps the care provider to classify childhood illness based on danger indicators and severity (Reñosa, Dalglish & Bärnighausen, 2020).

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Nigeria adopted the IMCI strategy in 1996, and since then some training programs have been organized by the government for some providers in the primary health level of public service. However, these training programs have not been very consistent over the years and the benefits of IMCI intervention are yet to reflect on the nation's health indicators. The nation's under-5 mortality rate has risen from 128 to 132 deaths per 1,000 live births from the year 2013 to 2018 (National Population Commission and ICF, 2019).

The increasing national child mortality statistics warrant a review of the knowledge base of primary health care providers concerning the IMCI strategy. It is hence essential to gain insight into the association between in-service training on IMCI and the knowledge of IMCI among primary care providers.

Information from such insight could inform policy recommendations that could improve the effectiveness of the IMCI Program.

In Port Harcourt (southern Nigeria), the under-five mortality rate was documented in 2018 to be 79 deaths per 1,000 live births (National Population Commission and ICF, 2019). Although this statistic is lower than the national under-5 mortality rate of 132 deaths per 1,000 live births, it however falls short of the Sustainable Development Goals target of less than 12 under-5 mortality per 1000 live births. Previous studies such as Afolalu (2020) and Pandya, Slemming and Saloojee (2018) have blamed the lack of in-service training as one of the factors limiting the effectiveness of the IMCI in semi-rural parts of Nigeria and Africa respectively. Port Harcourt is an urban metropolis in southern Nigeria, and it has no recent study in the past ten years that examined the primary healthcare providers' IMCI-related knowledge. This study aimed to examine the knowledge concerning IMCI intervention strategy among trained and untrained providers in Port Harcourt primary healthcare centres. The specific objectives of this study were to (1) assess the knowledge of IMCI intervention strategy among the untrained, (2) assess the knowledge of IMCI intervention strategy among the trained, and (3) compare the knowledge of IMCI intervention strategy between the trained and untrained providers.

2.0 Materials and Methods 2.1 Study design, period, and setting

A cross-sectional design was employed among consenting respondents (nurses) in Port Harcourt primary healthcare centres between 10th January and 15th April 2020. This study was conducted in all the 12 Model Comprehensive Primary Healthcare Centres (MCPHCs) in Port Harcourt, Rivers State. They include the primary healthcare centres at Abuloma, Amadi-Ama, Azuabie, Bundu-Ama, Churchill, Elekahia, Mgbundukwu, Nkpolu, Okuru, Orogbum, Ozuboko, and Potts-Johnson in Port Harcourt metropolis. Port Harcourt is situated about 52 kilometers southeast of Ahoada and 40 kilometers northwest of Bori. It shares boundaries with Obio-Akpor on the north, Eleme on the east, Okirika on the south, and Degema on the west. It accommodates at least 650,000 persons within its 109 square kilometers area.

2.2 Population, sample size, and sampling procedure

All the nurses practicing in the 12 MCPHCs in Port Harcourt composed the population for this study which amounted to 63. The census sampling method was used to enroll all members of the population into the study, but only 52 nurses consented to participate in this study (82.5% of the population). It included 12 respondents who had attended at least one IMCI training in the past (trained), and 40 respondents who had not attended any IMCI training in the past (untrained).

2.3 Instrument, data collection, and data analysis

A novel structured 24-item questionnaire with test-retest reliability of 0.81 was used for data collection from consenting respondents. The questionnaire consisted of two sections (A and B), where section A elucidated the background characteristics of the respondents and section B assessed the IMCI-related knowledge. The data collection procedure began with giving the questionnaire to the respondents to fill anonymously after the aim of this study has been explained to them. Knowledge of IMCI was operationally graded as inadequate (correct

responses in less than 17 out 24 questionnaire items, score < 70%) and adequate (correct responses in not less than 17 out 24 questionnaire items, score $\geq$ 70%). Frequency and percentage were employed as descriptive statistical techniques. Frequency and percentages were used to summarize the questionnaire items. To test the difference of IMCI-related knowledge between the trained and untrained providers, the Mann-Whitney U test was employed at a 5% significance level. The data were analyzed with the aid of Statistical Products and Service Solutions version 25 (IBM SPSS, Chicago, IL, USA).

2.4 Ethical clearance

This study followed the Helsinki Declaration guidelines for studies involving humans. It was given ethical approval by the Institutional Review Board of the University of Port Harcourt on January 10th, 2020 (ID: UPH/MM69/011). Participation in this study was voluntary and written informed consent was collected before data collection from each respondent.

3.0 Results

Table 1 summarized the background characteristics of the respondents and showed that the majority of the respondents were aged 30-39 (40.4%), with post-basic nursing diploma (53.8%), 1-10 years of work experience (63.5%), and IMCI untrained (76.9%).

Table 1: Background characteristics of the respondents   (n = 52)

Variables	n	%
Age		
20-29	12	23.1
30-39	21	40.4
40-49	11	21.2
50-59	8	15.4
Sex		
Female	43	82.7
Male	9	17.3
Marital status		
Married	43	82.7
Single	9	17.3
Educational qualification		
Basic nursing diploma (RN)	12	23.1
Post basic nursing diploma (RM/RPHN)	28	53.8
Bachelor's degree (BSc/BNSc)	10	19.2
Master's degree (MSc/MNSc)	2	3.8
Years of professional nursing practice		
1-10	33	63.5
11-20	19	36.5
Training program on IMCI		
Trained on IMCI	12	23.1
Not trained on IMCI	40	76.9

n = frequency, % = percentage

Table 2 summarized the knowledge of IMCI among respondents without IMCI training, and it revealed that the majority of the respondents gave correct responses in 11 out of 24 items (45.8%, inadequate IMCI knowledge).

Table 2: Knowledge of IMCI among respondents without IMCI training   **n = 40**

Item	Correct response n	Incorrect response n	Score (Percent of correct responses)
IMCI Assessment strategy			
Integrated in IMCI refers to holistic care of the child under five years	27	13	67.5
The rationale for the integrated approaches is that most children present with signs and symptoms related to more than one condition	21	19	52.5
Improving health workers' skills, the healthcare system, and family/community practices are components of IMCI	17	23	42.5
IMCI clinical management requires sick children to be classified into defined categories of severity, based on the presence of key signs and symptoms	37	3	92.5
The classification is not aimed at reaching a precise diagnosis, instead it is to enable the selection of a treatment/management plan	31	9	77.5
Checking every sick child for general danger signs is how to begin	23	17	57.5
All sick children with serious classification need pre-referral treatment and urgent referral	31	9	77.5
Danger signs of IMCI diseases			
Child not able to drink or breastfeed	19	21	47.5
Child vomits everything	13	27	32.5
Child has had more than one convulsions or is convulsing	24	16	60.0
Child is lethargic or unconscious	16	24	40.0
What to do when danger signs are present (Case management)			
Complete assessment immediately	19	21	47.5
Provide urgent pre-referral treatment	15	25	37.5
Refer child to hospital	14	26	35.0
Major symptoms to be assessed			
Cough or difficulty in breathing	16	24	40.0
Diarrhoea	24	16	60.0
Fever	18	22	45.0
Ear problems	12	28	30.0
Malnutrition and anaemia	23	17	57.5
Check for immunization status	9	31	22.5

Then the child's illnesses are classified using a colour-coded triage system	37	3	92.5
IMCI colour-coded triage system			
Green = mild sign of disease and needs simple home care	25	15	62.5
Yellow = moderate sign of disease and needs drug treatment and follow-up	14	26	35.0
Red = very severe sign of disease and needs urgent referral to hospital	17	23	42.5

n = frequency

Table 3 summarized the knowledge of IMCI among respondents with IMCI training, and it revealed that the majority of the respondents gave correct responses in 12 out of 24 items (50%, inadequate IMCI knowledge).

Table 3: Knowledge of IMCI among respondents with IMCI training **n = 12**

Item	Correct response n	Incorrect response n	Score (Percent of correct responses)
IMCI Assessment strategy			
Integrated in IMCI refers to holistic care of the child under five years	3	9	25.0
The rationale for the integrated approaches is that most children present with signs and symptoms related to more than one condition	5	7	41.7
Improving health workers' skills, the healthcare system, and family/community practices are components of IMCI	8	4	66.7
IMCI clinical management requires sick children to be classified into defined categories of severity, based on the presence of key signs and symptoms	12	0	100.0
The classification is not aimed at reaching a precise diagnosis, instead it is to enable the selection of a treatment/management plan	11	1	91.7
Checking every sick child for general danger signs is how to begin	12	0	100.0
All sick children with serious classification need pre-referral treatment and urgent referral	12	0	100.0
Danger signs of IMCI diseases			
Child not able to drink or breastfeed	6	6	50.0
Child vomits everything	8	4	66.7
Child has had more than one convulsions or is convulsing	9	3	75.0
Child is lethargic or unconscious	6	6	50.0

What to do when danger signs are present (Case management)			
Complete assessment immediately	6	6	50.0
Provide urgent pre-referral treatment	5	7	41.7
Refer child to hospital	6	6	50.0
Major symptoms to be assessed			
Cough or difficulty in breathing	6	6	50.0
Diarrhoea	11	1	91.7
Fever	9	3	75.0
Ear problems	12	0	100
Malnutrition and anaemia	3	9	25.0
Check for immunization status	5	7	41.7
Then the child's illnesses are classified using a colour-coded triage system	12	0	100.0
IMCI colour-coded triage system			
Green = mild sign of disease and needs simple home care	3	9	25.0
Yellow = moderate sign of disease and needs drug treatment and follow-up	6	6	50.0
Red = very severe sign of disease and needs urgent referral to hospital	8	4	66.7

n = frequency

Table 4 compared the knowledge of IMCI between respondents with and without IMCI training (trained vs. untrained), and it showed no significant difference (p = >0.05).

Table 4: Knowledge of IMCI among respondents with and without IMCI training   **N = 52**

Item	Score of respondents with IMCI training n = 12	Score of respondents without IMCI training n = 40	U	p value
IMCI Assessment strategy			19.00	0.522
Integrated in IMCI refers to holistic care of the child under five years	25.0	67.5		
The rationale for the integrated approaches is that most children present with signs and symptoms related to more than one condition	41.7	52.5		
Improving health workers' skills, the healthcare system, and family/community practices are components of IMCI	66.7	42.5		

IMCI clinical management requires sick children to be classified into defined categories of severity, based on the presence of key signs and symptoms	100.0	92.5		
The classification is not aimed at reaching a precise diagnosis, instead it is to enable the selection of a treatment/management plan	91.7	77.5		
Checking every sick child for general danger signs is how to begin	100.0	57.5		
All sick children with serious classification need prereferral treatment and urgent referral	100.0	77.5		
Danger signs of IMCI diseases			6.50	0.250
Child not able to drink or breastfeed	50.0	47.5		
Child vomits everything	66.7	32.5		
Child has had more than one convulsions or is convulsing	75.0	60.0		
Child is lethargic or unconscious	50.0	40.0		
What to do when danger signs are present (Case management)			9.00	0.529
Complete assessment immediately	50.0	47.5		
Provide urgent pre-referral treatment	41.7	37.5		
Refer child to hospital	50.0	35.0		
Major symptoms to be assessed			15.00	0.250
Cough or difficulty in breathing	50.0	40.0		
Diarrhoea	91.7	60.0		
Fever	75.0	45.0		
Ear problems	100	30.0		
Malnutrition and anaemia	25.0	57.5		
Check for immunization status	41.7	22.5		
Then the child's illnesses are classified using a colourcoded triage system	100.0	92.5		
IMCI colour-coded triage system			12.00	1.000
Green = mild sign of disease and needs simple home care	25.0	62.5		
Yellow = moderate sign of disease and needs drug treatment and follow-up	50.0	35.0		
Red = very severe sign of disease and needs urgent referral to hospital	66.7	42.5		

U = Mann-Whitney U test; n = frequency; p value < 0.05 = significant

4.0 Discussion

This study found that knowledge of IMCI among respondents without IMCI training was inadequate (11 out of 24 items; score 45.8%). This finding is perhaps because IMCI protocol is not routinely used in the teaching hospitals where professional education of healthcare providers occurs before their employment in the public healthcare system. This finding was in line with the results of a Malawian study conducted by Kilov et al. (2021) that found IMCI knowledge to be inadequate (4 out of 10; score 40%). The proximity in findings could be linked to the design applied in the study. Both studies utilized public primary health centres. This finding was higher than was found in an Iraqi study conducted by Hussein and Farhood (2019) that found inadequate IMCI knowledge among healthcare providers (7%).

The discrepancy in findings could be related to the background characteristics of the respondents. This study assessed only nurses in the primary healthcare centres, whereas the Iraqi study assessed physicians and nurses together.

This study found that the knowledge of IMCI among respondents with IMCI training was inadequate (12 out of 24 items, score 50.0%). This finding could be because the IMCI trained healthcare providers do not routinely adhere to the IMCI protocol in their clinical activities as documented by Khatun, Saha, Aktar and Hasin (2021) in a Bangladeshi study. This finding partly corroborates with an Indian study by Joshi, Koringa, Sochaliya and Kartha (2016) that found inadequate knowledge among IMCI trained healthcare providers (57.4%). The slight discrepancy in findings could be linked to the sample size utilized in the study. The Indian study examined 774 IMCI trained healthcare providers while this study assessed only 12 IMCI trained healthcare providers. This finding was consistent with another Iraqi study by Hussein and Aldeen (2020) that found inadequate knowledge among IMCI trained healthcare providers.

This study found no significant difference in IMCI-related knowledge between previously trained and untrained healthcare providers (p = > 0.05). This finding would imply an insignificant effect of IMCI training (organized by the government in the past) on the IMCI-related knowledge of healthcare workers. This finding perhaps points to a lack of mentorship and supervision regarding IMCI protocol. This finding contradicts the findings of Kilov et al. (2021) that noted an association between IMCI-related knowledge and previous IMCI training. The main strength of this study was applying the census sampling technique which tries to eliminate sampling bias. Moreover, the limitations of this study were the use of a novel non-standardized IMCI knowledge scale, and a cross-sectional design which made it difficult to establish a causal relationship.

5.0 Conclusion and Recommendation

In this study, IMCI-related knowledge was inadequate between IMCI-trained and untrained healthcare providers and there was no significant difference in knowledge between them. In addition to frequent re-fresher IMCI training for healthcare providers, mentorship and supervision should be explored.

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