Jagua Publication

Current Research in Interdisciplinary Studies 2(1): 43–58.
https://doi.org/10.58614/cris213

Research Article

Uptake of Integrated Community Case Management and Associated Factors Among Caregivers of Children Under Five Years in Apac District, Northern Uganda

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www.jpub.org

Received:
December 27, 2022
Accepted:
January 6, 2023
Published:
January 13, 2023

How to cite:
Job et al. 2023. "Uptake of Integrated Community Case Management and Associated Factors Among Caregivers of Children Under Five Years in Apac District, Northern Uganda." Current Research in Interdisciplinary Studies 2(1): 43-58. https://doi.org/10.58614/cris213

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Abstract

Background: Globally, child mortality remains a public health concern with 38 deaths per 1000 live births and accounting for 5.2 million deaths in children under 5 years, with Sub-Saharan Africa region having the highest figure of 76 deaths per 1,000 live births that is equivalent to one child in 13 dying before reaching age five in 2019. In Uganda, the child mortality rate has reduced gradually from 191 deaths per 1000 live births to 45.8 deaths per 1000 live births in 2019.

Objective: To determine the Uptake of integrated community case management of childhood illnesses and associated factors among caregivers of children under five years in Apac district. *Methods:* This was a cross-sectional study using quantitative methods, 403 family caregivers of children under five in Apac District. Data was collected using a semi-structured questionnaire on Uptake, associated factors, and perceptions of caregivers towards ICCM services. Data was analyzed using STATA version 15.1.

Results: The majority of the caregivers were female 337 (83.6%), with a mean age of 27.7 years and standard deviation of 6.64 years, attained primary education, 253(62.8%), Christians, 393 (97.5%), and married 346 (85.9%) were married. The level of Uptake of ICCM services was 38.7% (156/403). Results of the study indicate that the child's illness (p=0.01, AOR=3.5(2.1-7.2), knowledge of ICCM (P<0.01, AOR12.1 (1.7-87), timely services (p<0.001, AOR (12.7(3.4-47), and referral by VHT (P<0.01, AOR 4.0(1.4-11.0). were statistically significant.

Conclusion: The Uptake level of ICCM services provided by the VHTs was low, though caregivers had a good perception of ICCM services and child referral to health facilities by VHT. To improve Uptake of ICCM services, there is a need to provide more information regarding ICCM within the community.

Keywords: uptake, children under five, childhood illnesses, perception, ICCM, caregivers

1. Introduction

Globally child mortality is still a public health concern with 38 deaths per 1000 live births and accounting for 5.2 million deaths in children under 5 years (Gera et al., 2016). Pneumonia, Malaria, and diarrhea are the leading causes of death in children under 5 years globally, with pneumonia, diarrhea, and malaria being among the leading causes of death in under-five children (Amouzou et al., 2016). Effective

treatment of these conditions exists, but children in low and middle-income countries often find it hard to access the formal health care they need (N. P. Miller et al., 2014).

Sub-Saharan Africa remains the region with the highest under-five mortality rate in the world. In 2019, the region had an average under-five mortality rate of 76 deaths per 1,000 live births which is equivalent to one child in 13 dying before reaching age five (David Sharrow et al., 2020). This rate is 20 times higher than that of 1 in 264 in the region of Australia and New Zealand and two decades behind the world average, which achieved a one in 13 rates by 1999(David Sharrow et al., 2020). Children in developing countries are 15 times more likely to die before the age of five compared to children in developed regions (Vakili, Emami Moghadam, Khademi, Vakili, & Saeidi, 2015).

In Uganda, the Child mortality rate is still at 45.8 deaths per 1000 live births and has reduced gradually from 191 deaths per 1000 live births in 2019(UNICEF et al., 2020), while Apac District still has a worrying number of deaths among children under five at about 105/1000 live birth (Eunice, 2018). Integrated community case management (ICCM) involves the assessment and treatment of more than one illness (Kitutu et al., 2017), the program is a community-level intervention where community health workers (CHWs) are trained in integrated case management of febrile illnesses (Mubiru et al., 2015). They are provided with point-of-care diagnostics (such as antigen-based malaria rapid diagnostics tests and respiratory rate counters) and medicines (including dose-packed color-coded packs) (Nanyonjo et al., 2015), family care givers are supposed to report any illness to the VHTs and the receive care from them. ICCM was recommended by WHO in the year 2004 to be implemented by the rural community in an attempt to combat malaria, pneumonia, and diarrhea diseases (Nanyonjo, Nakirunda, Makumbi, Tomson, & Källander, 2012). There has been slow implementation, especially in low resourced countries but little is known about the uptake of this services by family care givers in many developing countries including Uganda

Uganda has adopted and implemented the community case management of malaria since 2002, locally referred to as home-based management of fever, HBMF (Banek et al., 2015). This intervention was meant to close the gap in access to treatment of fever presumed to be malaria by using Artemisinin-based combination therapy (ACT) which is the first-line treatment of malaria in Uganda (Banek et al., 2015). The Community Health Workers (CHWs) locally known as village health teams (VHT) provide pre-packaged anti-malarial drugs presumptively to children that present with or have a history of fever (Nanyonjo, Kertho, Tibenderana, & Källander, 2020). This intervention seems to improve the status of malaria in under-five children (Nanyonjo et al., 2020).

In 2010, the Ministry of health Uganda officially launched ICCM by adopting a policy to allow VHTs to treat acute respiratory infection presumed to be pneumonia, diarrhea and zinc, then malaria using common medicines (Mubiru et al., 2015). Malaria consortium with support from UNICEF introduced the ICCM program in three districts in Uganda then later to 8 districts, Apac district was one of the beneficiary districts (NABATANZI, 2019). Uptake of ICCM services among care givers of children under five years has been reported to be low in some peri urban places

(Druetz et al., 2015; Nanyonjo et al., 2015) yet these are in directly care of the children and are sought to be the direct individuals utilizing the ICCM services. Although this has not been assessed in hard to reach areas like northern Uganda, it could be one of the bottlenecks impending the realization of the SDG 3.

Several studies have been conducted on the CHWs/VHTs but have not really focused on caregivers being the gateway to effective ICCM success and yet they are the primary implementer of this program, this study therefore aimed at determining the Uptake of integrated community case management and associated factors among caregivers of children under five years in Apac District.

2. Methodology

2.1. Study design

This study was a cross-sectional descriptive in nature where a quantitative data collection method was employed.

2.2. Study site and setting

The study was conducted in Apac district which is located in northern Uganda. The majority of the people are subsistence farmers, who speak Lango language Apac District is bordered by Oyam District to the north-east, Kole District to the north, lira city and district to the north-east, Dokolo district to the east, Amolatar District to the south, Nakasogola district to the south-west, and Kiryandongo District to the west.

2.3. Study population

The study was conducted among caregivers of children under five years in Apac District.

2.4. Eligibility criteria

Inclusion criteria

All caregivers above 18 years of age and are taking care of children under five years in Apac District.

Exclusion criteria

All caregivers of children under five years and are above 18 years of age, but are very ill, mentally incapacitated, and are unable to communicate at the time of data collection.

2.5. Sample size determination

The sample size was calculated using Using the Kish-Leslie formula (Kish, 1965).

2.6. Sampling method and procedure

A simple random sampling method was used to select 3 out of the 8 sub-counties (Apac sub-county, Chegere, Ibuje, Akokoro, Apoi, Akokoro Town council, Ibuje Town council). The names of each of the 8 sub-counties were written on small pieces

of paper, put in a container, and mixed thoroughly, 3 papers were picked without replacement. The 3 sub-counties include Apac, Chegere, and Ibuje sub-counties.

Table 1. Distribution of the study participants

Sub-county	UBOS 2021 Projected Population	Sample size allocation	% of respondents by Sub County
Apac sub-county	70000	179	42.2%
Chegere sub-county	44800	115	27.1%
Ibuje sub-county	50900	130	30.7%
Total	165700	424	100.0%

Source (UBOS 2014 Kish Leslie sampling)

A simple random sampling method was used to select nine parishes, three from each of the selected sub-counties and then 5 villages from each of the parishes. The sample size was divided after calculation concerning the population size of each selected sub-county. From each of the 45 villages, 10 households were selected using a simple random sampling method. The sampling frame consisting of households in respective villages was generated with support from the LC1 and VHTs.

2.7. Data collection procedure

Written permission to carry out the study was sought from the Chief Administrative Officer through DHO, Apac District, and the local council leaders of the Villages, permission to participate in the study was got from the household heads verbally and from the individual respondent by providing a signed/thump-printed written informed consent. Participants were interviewed in their own homes; the local council home was the starting point in traversing the village in order to get participants. Participants who consented to the study were interviewed using an interviewer-administered questionnaire. Upon completion of the interview, participants were appreciated for their time and participation and reassured of confidentiality. The data collection process lasted approximately 20 minutes.

2.8. Data collection tool

Data was collected using a structured and pretested interviewer-administered questionnaire.

The questionnaire was adapted to the research objectives and developed based on the literature.

2.9. Data analysis

Data was exported from KOBO COLLECT to STATA version 15.1 for further analysis. Summary statistics were conducted to describe the variables and factors

under study. To answer objectives 1 and 3, the bivariate analysis was carried out to identify variable that were suitable for multivariate analysis. This was done through univariate logistic regression analysis; variables whose p-value were less than 0.20 in bivariate analysis were included in multivariate logistic regression. Multi-Collinearity was diagnosed using standard error and also Hosmer-Leme-show test was performed to test for model fitness. The odds ratio at 95% CI was estimated to measure the strength of association. Variables were interpreted as having a statistically significant association when the p-value was < 0.05 and determined the factors associated with Uptake of ICCM.

2.10.Ethical considerations

Approval

The proposal was presented to the faculty of public health; at Lira University for coherence, and ethical approval was sought from the Uganda National council for science and technology through the Gulu University Research Ethics committee. Letters of approval were presented to the Chief administrative officer Apac District. Permission to carry out the study from the sub-counties was sought from the sub-county chiefs, parish chiefs, and the local council leaders.

Informed Consent

Written informed consent was obtained from study participants and they were given a copy to keep with them in case of any queries.

Confidentiality

Respondents' confidentiality was ensured by avoiding unique identifiers like names, using password-protected computers for storing information.

Privacy

To ensure privacy, respondents were interviewed from places of their choice within their households.

3. RESULTS

3.1. Socio-demographic characteristics of the respondents

The result in Table 2 showed that the respondents were predominantly female 337 (83.6%), with a mean age of 27.7 years and standard deviation (SD+/- 6.64). Approximately 253(62.8%) had attained primary education. The majority 393 (97.5%) of the respondents were Christians and 346 (85.9%) were married. About 161 (40%) of the respondents had 5 to 6 persons in the household while 379 (94%) had between 1 to 2 children under five years.

Table 2. Socio demographic factors of 403 family caregivers of children aged below 5 years (N=403).

Variables	Categories	Frequency (n)	Percentage (%)
Gender	Female	337	83.6
	Male	66	16.4
Age (years)	<20	42	10.4
	20-24	95	23.6
	25-29	129	32
	30-34	78	19.4
	35-39	33	8.2
	40-44	19	4.7
	≥45	7	1.7
Level of education	No formal education	6	1.5
	Primary	253	62.8
	Secondary	105	26.1
	Tertiary	39	9.6
Religion	Christian	393	97.5
	Muslim	8	2.0
	Others	2	0.5
Marital status	Single	346	85.9
	Married	31	7.7
	Divorced	15	3.7
	Widow	11	2.7
Number of children<5	1	229	56.8
	2	150	37.2
	≥3	24	6.0
No persons in the household	1-2	16	4.0
	3-4	140	34.7
	5-6	161	40
	≥7	86	21.3
Occupation	Formal employment	9	2.2
	Self-employment	168	14.7
	Unemployed	226	56.1
Level of income	Less than	282	70

100,000/=		
100,000/= to 200,000/=	100	24.8
More than 200,000/=	21	5.2
Time is taken to reach a VHT		
Less than 1 hour	331	77.2
1 hour	68	16.9
2 hours or more	3	0.7
child ill in the last 2 weeks		
No	111	27.5
Yes	292	72.5

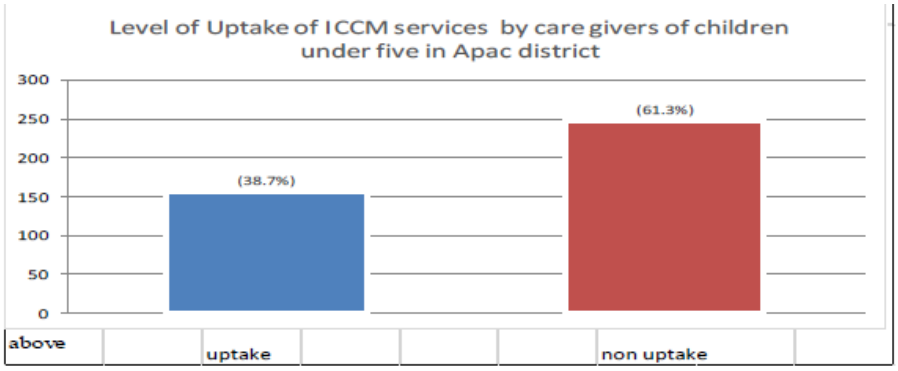
Table 3. Showing The Characteristics Of Family Care Takers Who Had A Child Ill In The Last Two Weeks

Variable	**Frequency(n)**	**Percentage%**
Cause of the illness		
Cough	40	7.7
Diarrhea	60	14.9
Fever	195	48.4
Others	6	1.5
The severity of the illness		
Mild	30	7.4
Moderate	187	46.4
severe	75	18.6
Number of days of illness		
1-2 days	169	30.3
3-4 days	93	17.2
5 and above	141	40

3.2. Uptake level of Integrated Community Case Management Services

Results in the graph showed that only 38.7 %(156/403) of the caregivers of children under 5 years had seen VHTs in the previous month for ICCM care services while the majority 61.3 %(247/403) did not access the ICCM services from the VHTs.

Figure 1. Level of Uptake of ICCM services by caregivers of children under five



less than 50% of the caregiver did not access ICCM services from the VHTs as indicated in figure above

3.3. Experiences and Perceptions of family Caregivers on ICCM Services provided by the VHTS

Result from Table 3. Show that 90.3% (364/403) of the caregivers interviewed perceived that VHT had Knowledge of ICCM services while only 12.4% (50/403), 87.6% (353/403) of the respondents said that VHT explains ICCM to caregivers while all the 100% (403/403) respondents said that VHT cared for the children always. Up to 353 (87.6) of the caregivers said that their Children were referred to health facilities by the Village health team members, and up to 393 (97.5%) considered taking their back to VHT whenever they become sick.

Table 4. Perception of caregivers of children under 5 years on ICCM services (n=403).

Variables	Frequency (n)	Percentage
VHTs have Knowledge of ICCM services		
No	39	9.7
Yes	364	90.3
VHTs explain ICCM to caregivers		
No	50	12.4
Yes	353	87.6
VHTs care for the child		
Bad	0	0.0
Good	403	100
Child refers to a health facility by VHT		
No	50	12.4
Yes	353	87.6
Would have the child seen by VHT in the future e when the child is sick		
Not Sure	10	2.5
Yes	393	97.5

3.4. Factors associated with Uptake of ICCM services

Bi-vitiate analysis was performed to generate odds ratios using the confidence interval of 95% and a P value of≤ 0.2 was considered to be statistically significant.

Result in table 4. show that several factors considered to be scientifically associated with Uptake of integrated community case management services among caregivers of children under 5 years include: Age of the respondents 35-39 (P value 0.02, OR 4.0(1.3-12.5) and age 40-44 (p=0.002, OR13.0(1.6-106.1 Having 5-6 persons in the

household P=0.01, OR 3.9(1.4-11.1); Child ill in the last 2 weeks (P<0.00, OR 4.0 (2.5-6.5); Number of visits for ICCM services from 5 days (P<0.00, OR 0.3(0.2-0.4); Knowledge on ICCM services offered (P<0.00, OR 23.9(9.0-63.2); VHT explain ICCM to health care providers P<0.00, OR 8.9(4.3-18.6); VHTs communication skills of the VHT (P<0.02, OR 5.4(1.3-23.0); (P<0.00, OR 3.6(2.3-5).

Table 5. Table 4: Bivariate analysis of Uptake of ICCM services with associated factors

Variable	Didn't receive ICCM	Receive ICCM	OR (95%CI)	P Value
Age group (in years)				
Less than 20 years	41.9(18)	58.1(25)	1	
20-24 years	33.7(32)	66.3(63)	1.4(0.8-3.0)	0.36
25-29 years	25.6(33)	74.4(96)	2.1(1.0-4.3)	0.05
30-34 years	28.2(22)	71.8(56)	1.8(0.8-4.0)	0.13
35-39 years	15.2(5)	84.9(28)	4.0(1.3-12.5)	0.02*
40-44 year	5.3(1)	94.7(18)	13.0(1.6-106.1)	0.02*
45 and above years	16.7(1)	83.3(5)	3.6(0.4-33.5)	0.26
Sex				
Female	29.4(99)	70.6(238)	1	
Male	19.7(13)	80.3(53)	1.7(0.9-3.2)	0.11
Level of education				
No formal education	16.7(1)	83.3(5)	1	
Primary	27.3(69)	72.7(184)	0.5(0.1-4.6)	0.57
Secondary	26.7(28)	73.3(77)	0.6(0.1-4.9)	0.59
Tertiary	35.9(14)	64.1(25)	0.4(0.04-3.4)	0.37
Religion				
Christian	27.2(107)	72.8(286)	1	
Moslem	62.5(5)	37.5(3)	0.2(0.1-1.0)	0.04*
Marital status				
No married	35.1(20)	64.9(37)	1	
married	26.6(92)	73.4(254)	1.5(0.8-2.7)	0.19*
Number of children under five in the household				
1 child	30.1(69)	69.9(160)	1	
2 children	24.0(36)	76.0(144)	1.4(0.9-2.2)	0.19
3 or more children	29.2(7)	70.8(17)	1.0(0.4-2.6)	0.92
Number of persons in the household				
1-2 persons	50.0(8)	50.0(8)	1	

3-4 persons	35.0(49)	65.0(91)	1.9(0.7-5.3)	0.24
5-6 persons	20.5(33)	79.5(128)	3.9(1.4-11.1)	0.01*
7 and above persons	25.6(22)	74.4(64)	2.9(1-8.7)	0.06
occupation				
Formal employment	22.2(2)	77.8(7)	1	
self-employment	25.6(43)	74.4(125)	0.8(0.2-4.2)	0.82
unemployed	29.7(67)	70.4(159)	0.7(0.1-3.3)	0.63
Monthly income				
Less than 100,000/=	26.6(75)	73.4(207)	1	
100,000/= to 200,000/=	29.0(29)	71.0(71)	0.9(0.5-1.5)	0.64
More than 200,000/=	38.1(8)	61.9(13)	0.6(0.2-1.5)	0.26
Time is taken to reach a VHT				
Less than 1 hour	27.0(84)	73.0(227)	1	
1 hour	23.5(16)	76.5(52)	1.2(0.6-2.2)	0.56
2 hours or more	0.0(0)	100.0(2)		
child ill in the last 2 weeks				
No	49.6(55)	50.5(56)	1	
Yes	19.5(57)	80.5(235)	4.0(2.5-6.5)	<0.00*
Cause of the illness				
Cough	32.3(10)	67.7(21)	1	
Diarrhea	16.7(10)	83.3(50)	2.3(0.9-6.6)	0.09*
Fever	19.0(37)	81.0(158)	2.0(0.9-4.7)	0.10*
Others	0.0(0)	100.0(6)		
The severity of the illness				
Mild	23.3(7)	76.7(23)	1	
Moderate	16.6(31)	83.4(156)	1.5(0.6-3.9)	0.36
severe	25.3(19)	74.7(56)	0.9(0.3-2.4)	0.83
Number of days of illness				
1-2 days	17.8(30)	82.3(139)	1	
3-4 days	18.3(17)	81.7(76)	1.0(0.5-1.9)	0.92
5 and above	46.1(65)	53.9(76)	0.3(0.2-0.4)	<0.00*
Knowledge of ICCM services offered				
No	86.8(33)	13.2(5)	1	
Yes	21.6(79)	78.4(286)	23.9(9.0-63.2)	<0.00*
Explain ICCM to health care providers				

NO	72.5(29)	27.5(11)	1	
Yes	22.9(83)	77.1(280)	8.9(4.3-18.6)	<0.00*
VHTs offer services within 4 hours				
No	73.4(47)	26.6(17)	1	
Yes	18.9(64)	81.1(274)	11.8(6.4-22.0)	<0.00*
VHT treating you with respect				
Bad	40.0(2)	60.0(3)	1	
Good	24.3(80)	75.7(249)	2.1(0.3-12.6)	0.43
Very good	15.8(6)	84.2(32)	3.5(0.5-26.0)	0.21
VHTs communication skills				
Bad	62.5(5)	37.5(3)	1	
Good	23.7(75)	76.3(242)	5.4(1.3-23.0)	0.02*
Very Good	18.0(9)	82.0(41)	7.6(1.5-37.7)	0.01*
Care for the child				
Bad	60.0(3)	40.0(2)	1	
Good	25.4(81)	74.6(239)	4.4(0.7-26.8)	0.11
Very good	13.5(7)	86.5(45)	9.6(1.4-68.3)	0.02*
Child refers to HF by VHT				
No	44.8(65)	55.2(80)	1	
Yes	18.2(47)	81.8(211)	3.6(2.3-5.7)	<0.00*

3.5. Multivariate analysis for the factors associated with Uptake of ICCM services by caregivers of children under 5 years

At the multivariate level, child illness (p=0.01, AOR=3.5(2.1-7.2), knowledge of ICCM (P<0.01, AOR12.1 (1.7-87), timely services (p<0.001, AOR (12.7(3.4-47), and referral by VHT (P<0.01, AOR 4.0(1.4-11.0) were statistically significantly associated with Uptake of ICCM services by caregivers of under-fives.

Care givers who reported having a sick child within the previous 2 weeks had a more than 3-fold increased odds of uptake ICCM services compared to those whose children were not sick. Caregivers having knowledge on ICCM services had 12-fold increased odds of up taking ICCM services compared to caregivers without knowledge of ICCM. Receiving timely services within 4 hours had a more than 12-fold increased odds of uptake ICCM services compared to delayed services offered. Being referred by a VHT had a 4-fold increased odds of up taking ICCM services compared to not being referred by a VHT.

Table 6. Factors associated with Uptake of ICCM services among caregivers of under-fives

Variable	Didn't receive ICCM	Receive ICCM	CrudeOR (95%CI)	AOR (95% CI)	P Value

child ill in the last 2 weeks					
NO	49.6(55)	50.5(56)	1.00	1.00	
Yes	19.5(57)	80.5(235)	4.0(2.5-6.5)	3.5(2.1-7.2)	0.01*
Knowledge on ICCM					
No	86.8(33)	13.2(5)	1.00	1.00	
Yes	21.6(79)	78.4(286)	23.9(9.0-63.2)	12.1(1.7-87)	0.01*
Services offered within 4 hours					
No	73.4(47)	26.6(17)	1.00	1.00	
Yes	18.9(64)	81.1(274)	11.8(6.4-22.0)	12.7(3.4-47)	<0.00 *
The child referred to HF by VHT					
No	44.8(65)	55.2(80)	1.00	1.00	
Yes	18.2(47)	81.8(211)	3.6(2.3-5.7)	4.0(1.4-11.0)	0.01*

4. Discussion Of Results

4.1. Level of Uptake of ICCM services among caregivers of children under five years

The Uptake of ICCM services provided by the VHTs in Apac district is generally low among the caregivers. In this study, Uptake was measured using a proxy indicator of receiving the ICCM services from the VHTs where the results indicate that only 38.7% (156/403) of caregivers of children under 5 years shows uptake of ICCM services offered by VHTs. The study findings are similar to those in a report by Allen et al, (2021) that the utilization of integrated community case management in most of the Sub-Saharan African countries (Cameroon, DRC, Malawi, Senegal, Sierra Leone, South Sudan, and Zambia) was low at 36.7%. The finding is not very far from those of a study conducted by Samuel and Arba, (2021) in Ethiopia on the magnitude of the utilization of integrated community case management services which reported a low magnitude of the utilization at 25.3% of ICCM services. However, the study finding is different from those of a study conducted in Kabarole by (Rukundo, Kwesiga, & Ario, 2016) on the implementation of ICCM policy which reported the higher percentage of 52.3% of care givers had utilized ICCM services. This finding is also not similar to those of a study by (Debel & Nigusso, 2022) in West Shewa, Ethiopia that reported utilization of the integrated community case management by caretakers for children under 5 years old to be at 57% which is way higher than the uptake level reported in Apac district. These differences in the findings could be attributed to the differences in the settings where the study was conducted.

The low Uptake of ICCM services in Apac district could be attributed to constant stock out of drugs and commodities which are meant to be used by the VHTs to implement these services hence individuals usually get biased about the service whenever they want to utilize it they are told that drugs are out of stock. Drug stock outs and unavailability of community workers were among the factors listed by participants when they reported their being un satisfaction with ICCM services in a study done in Kabarole district in western Uganda (Muhumuza, Mutesi, Mutamba, Ampuriire, & Nangai, 2015) and still these similar factors were highlighted by findings in study done in Ethiopia (Yohannes, Habtu, Abreham, & Ayele, 2021). It is important to note that the study that was done in Kabarole district in western Uganda

was conducted after training community health workers which could have led to the high uptake of ICCM.

4.2. Perceptions of caregivers of children under five years towards ICCM services

Generally, the current study findings showed that the majority of caregivers 373 (92.7%) had a good perception on ICCM services provided by VHTs. This finding confirms a study finding by (Shaw et al., 2016) in Kenya who observed that caregivers' expressed a preference for home-based pneumonia care over facility-based care. The finding further confirms the finding by (Salgedo et al., 2020), that most under-five children improve following the management by health extension workers. The findings are in line with findings by (Altaras et al., 2017) that ICCM was perceived to facilitate timely treatment access and improve child health in peri-urban settings; ICCM was perceived as an effective, well-utilized strategy, reflecting both VHT attributes and gaps in existing health services; and that relative to other health service providers, caregivers valued VHTs' free, proximal services, caring attitudes, perceived treatment quality, perceived competency and protocol used, and follow-up and referral services (Altaras et al., 2017)

Perceptions of individuals are usually influenced by different factors including level of education, in this study majority of participants had at least attained a primary level of education which might have enhanced their understanding of the ICCM services and hence their good perception (Shaw et al., 2016).

4.3. Factors associated with Uptake of ICCM services among caregivers of children under five years

Multivariate analysis revealed that child referral to a health facility by VHT was found to be statistically significantly associated with the Uptake of ICCM services by the caregivers with (P<0.01, AOR 4.0(1.4-11.0). Individuals whose child was referred to the health facility by the VHT were 4 times more likely to accept ICCM services offered by VHTs than their counterparts. These findings are consistent with those by Altaras that low community engagement in VHT selection, lack of referral transport, and poor availability of referral services also diminished the perceived effectiveness of the services (Altaras et al., 2017).

Perceived level of knowledge by the VHT on ICCM services was found to be statistically significantly associated with Uptake of ICCM services by the caregivers with (P<0.01, AOR12.1(1.7-87). This relates to the confidence that these caregivers had regarded the ICCM services offered by the VHTs. These findings are in line with those by Muhumuza and colleagues who illustrated that caretakers of the children had trust in the professional skills and knowledge of CHWs in handling their children and hence the acceptability of the ICCM services (Muhumuza et al., 2015; Mukanga et al., 2012).

Timely services were statistically significantly associated with Uptake of ICCM services in Apac district (P<0.00, **A**OR 12.7(3.4-47), caregivers who received timely services were 12 times more likely to accept ICCM services by the VHT than those who did not receive timely services. These results are similar to those revealed by Miller and colleagues in which timely access to services offered by VHTs increased

the acceptability of ICCM services (J. S. Miller et al., 2021; Mukanga et al., 2012). In the circumstances of a sick child, there is always anxiety among any caregiver and hence if care is rendered in a timely way, this builds confidence in the service offered hence acceptability is likely to be high.

Study findings showed having had a child sick in the previous 2 weeks was statistically significantly associated with Uptake of ICCM services by the caregivers ($P<0.01$, **A**OR 3.5(2.1-7.2). This is a new finding since previous studies have not highlighted this kind of relationship before. There is a possibility that caretakers who had a sick child in the two weeks had probably utilized the ICCM services provided by VHTs and hence the existence of the relationship.

Acknowledgment

First of all, I would like to thank the almighty God for the wisdom and knowledge that he has abundantly blessed me with to the completion of this dissertation, I would also like to take this opportune moment to convey my thankful words of appreciation to all the staffs of Lira University, Faculty of Public Health for all their supports towards this study. Administration and staff of Apac district health department, for welcoming my idea and support during the process of data collection.

My dear research assistants. Mr. Ogwal Daniel, Otim Tonny Isaac, Otwili Vincent, Opobo Andrew Auma Christine, and Opio Joel who worked tirelessly amidst all the hardships encountered during the process of data collection, may God grant you all your heart desires and blessings.

The DHO Apac, Mr. Francis Leone Oceng, and the entire staff who gave me all the support I needed during the data collection process.

However, I am equally grateful to my parents, Mr. Okao Godfrey and Mrs. Middy Okao, brothers Mr. Otim Tonny, Mr. Daniel Opuch, Ogwang Francis, my beloved wife Florence, and Children Okao Benjamin Haggai, Miss Gutu Abigail Faith and Amwana Amos and not forgetting my classmates: Abor Daniel, Cecilia Adyero, Aceng Agness, Acup Walter, Auma Brenda and Evelyne for their love, prayers, emotional support and encouragement towards the accomplishment of my goals.

May God almighty bless you all abundantly!

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