



RESEARCH ARTICLE

Utilization of Integrated Community Case Management of Common Childhood Illness and Associated Factors among Mothers/Caregivers in Wonsho District, Sidaama Region: Ethiopia

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Abstract

Introduction: Integrated Community Case Management (ICCM) is a community care strategy which seeks to extend case management of childhood illness beyond health facilities to the community level so that more children have access to lifesaving treatments. It is one of the high impact programs and interventions for child survival and provided by community health workers (CHWs) at the lowest level health units or in the community during home visits that can increase coverage of specific treatments and lead to substantial reductions in child mortality.

Objectives: To assess utilization of integrated community case management services and associated factors among under five children and to explore the perception of caregivers, women developmental team and health extension workers in wonsho district, Sidaama Region, Ethiopia.

Methods: Community based cross-sectional study using mixed quantitative and qualitative methods was conducted in wonsho district from April 1-30, 2019. For quantitative data 302 mothers/caregivers of under five sick children were interviewed and for qualitative data 26 In-depth individual interview (IDIs) of mothers, women developmental team (WDT) leaders and HEWs were interviewed, based on data saturation.

Results: The proportion of the ICCM services utilization at health posts by care givers of children sick with common childhood illnesses in Wonsho district, Southern Ethiopia was 21.9% [95% CI (16.8-26.2%)]. The main symptoms of childhood illnesses revealed in this study were diarrhea (40%) by followed cough (32%) and fever (18%). The result of multiple logistic regression analysis revealed that, the significant association of distance of a mother/caregiver's

house from the health post [AOR = 3.3; 95% CI (2.3, 24.7)], awareness on availability of ICCM services at their respective health post [AOR = 5.5; 95% CI (1.3, 23.7)] and the experience about danger signs of childhood illness [AOR = 1.2; 95% CI (0.6, 2.7)]. Added to this the reasons to delay in seeking advice or treatment from HEWs at health post were caregivers' tendency to home- based care, visit traditional healers, absence of HEWs in health post, considering the illness recover by its self, lack of drugs and supplies in HPs, poor service quality and financial difficulties.

Conclusion: It is noted in this study, the proportion of the ICCM services utilization at health posts by caregivers of children sick with common childhood illnesses as relatively higher than previous national and regional reports.

Keywords

ICCM, Sidaama, Ethiopia

Background

Integrated Community Case Management (ICCM) is a community care strategy which seeks to extend case management of childhood illness beyond health facilities to the community level so that more children have access to lifesaving treatments [1]. It is one of the high impact programs and interventions for child survival and provided by community health workers (CHWs) at the lowest level health units or in the community during home visits that can increase coverage of specific treatments and lead to substantial reductions in child mortality [2]. The ICCM package can differ based on national contexts, but most commonly includes diarrhea,

pneumonia and malaria diagnosis and treatment [3]. Pneumonia, diarrhea and malaria are among the leading causes of mortality in children under five years globally [1]. Thirty six percent of global under five deaths are caused by diarrhea, pneumonia and malaria, with under nutrition as an important underlying cause of mortality [4]. Effective therapies for these conditions exist, but children in poor rural communities often do not have access to formal health care and coverage of these interventions remains low in many countries [5]. Taking this into account, WHO and UNICEF recommend ICCM of pneumonia, diarrhea and malaria [6].

In 2010, 12 countries in sub-Saharan Africa were implementing Community Case Management (CCM) of the three illnesses and only 6 of them implemented in at least 50% of their country's districts [7]. The government of Ethiopia launched a community based health care delivery system, the Health Extension Program (HEP), during the Second Health Sector Development Program (HSDP II) in 2003. The HEP aims to create a healthy society by reducing maternal and child morbidity and mortality through the delivery of preventive and promotive services and selected high impact curative interventions at the community level [8].

Ethiopian government has adopted a global strategy entitled ICCM of Common Childhood Illness, particularly for the management of pneumonia [9]. The HEP is the platform on which ICCM was placed. In Ethiopia ICCM programme was officially launched on 23 February 2010. The programme started from areas with a stronger HEP in 2010, followed in 2011 by gradual expansion to the four developing regions of Benishangul, Gambella, Afar, and Somalia, and gradually reached national coverage [9]. ICCM in Ethiopia is integrated management by Health Extension Workers (HEWs) at the community level of all of the following childhood illnesses: pneumonia, diarrhea, malaria, malnutrition, measles, anemia, and ear infection [10].

Few studies was conducted in different parts in Ethiopia to estimate the status and factors associated utilization of delivering ICCM services among mothers/caregivers of under five children showed that the barriers are; socio-demographic factors, low levels of health-related knowledge and low awareness among the poor and marginalized groups, level of illness, believe on traditional healers, the degree of trust the caregivers have for the service providers, poverty [11-17]. It is being a home to a wide variety of culturally different ethnic groups, the mortality rate and childcare practices in SNNPR are expected to vary from place to place. Such variation calls for more local studies for better understanding of the problem and to design context specific interventions. For this reason, factors affecting ICCM service utilization at the health posts are generally not known because no studies have been done to elucidate such information in the Sidaama state

especially in the study area. It is, therefore, essential to examine the associated factors affecting utilization of ICCM services.

Methods and Materials

Study setting and period

Wonsho district is one of the districts in Sidaama Region. The administrative town of this district, Bokkaso is located about 331 KMs to south east of Addis Ababa, the capital city of Ethiopia. The district has a total population of 118898 and under five children in the district constituted 18560 (15.61%) of the population. The district have 17 rural and one urban kebeles. The livelihood of more than 95% of the district population is based on farming. The main crops grown in the area are coffee, inset, maize and chat. In terms of climatic conditions, 59% and 41% of the district constitutes high land and temperate or middle land respectively (census of CSA 2007). Regarding the health care facility, the district has five health centers that provide integrated management of newborn and childhood illness (IMNCI) services, 17 health posts that provide ICCM and CBNC services and 1 private clinic and the health coverage of the district is HP (71%), HC (105%) and Hospital (0%).

Study design

The study design was community based cross-sectional study using mixed quantitative and qualitative methods.

Source population

For quantitative method: The source populations were all under-five children, their mothers/caretakers.

For qualitative method: Mothers/caregivers, woman development team leaders/health development army and Health extension workers living in Wonsho district.

Study population

For quantitative method: All mothers or caretakers of the under-five sick children those with at least who had history of one or more episodes of childhood illness within four weeks prior to data collection was included in this study.

For qualitative method: Mothers/caregivers, Woman development team leaders and Health extension workers were included in the study.

Eligibility criteria

Inclusion criteria: Under- five Children currently sick or with history of illness of at least once within the last four weeks preceding the study. Mother/caretakers of eligible children were at least 15 years of age. Sick children must have one of the following complaints: diarrhea & vomiting, cough or difficulty of breathing/pneumonia; fever/malaria, unable to eating or drinking; ear problem; measles, severe acute malnutrition.

Exclusion criteria: Mothers/caregivers of under five children who unable to communicate and mothers/caregivers of under five children who under 15 age was excluded from the study.

Sample Size for the Qualitative: The study was involved 26 in-depth individual interviews (IDIs), 10 mothers/caregivers, 9 woman developmental team leaders and 7 HEWs. These participants were selected purposively and the number of participants was fixed based on data saturation.

Sampling procedure for quantitative study

Multistage sampling technique was employed to select the study participants. The district has 18 kebeles. Kebeles, which have health centers (5 kebeles) in the same kebele, were excluded because these kebeles have more access to IMNCI services. Hence, from remaining 13 kebeles, seven were selected randomly. Then census was done to get total number of households with under five children who had experienced of common childhood illness using HEWs a week before the start of actual data collection. Then based on the total number of listed under five children in the house holds of each kebele sample size was assigned using probability proportion to size allocation. Finally, simple random sampling method (lottery method) was employed to get required sample for each kebele.

Sampling procedure for qualitative study

All participants for IDIs were selected from sampled kebeles and nearby health post based on their convenience, accessibility and knowledge of conveying the information.

Data collection techniques and tools

Data collection techniques and tools for quantitative study: Data was collected using a pre-tested structured questionnaire developed and adapted from studies conducted Agarfa woreda, Jimma and West Hararghe zones [16,18] and other unpublished literatures. English language questionnaire was prepared and then it was translated to local language Sidamic, before the data collection and again it was translated back to English to check its consistency. Pre-test of 10% was done in not selected kebeles a week before the start of actual data collection; and based on the finding from the pre-test, the questioner was revised and time needed for interview was estimated. Face to face, interview was undertaken. For administering, the interview five-diploma nurse data collectors and two BSc nurses supervisors were used. All data collectors and supervisors were fluent speakers of Sidamic language. Data collectors and supervisors were trained for two days on the objectives, relevance of the study and data collection techniques such as, interview techniques, confidentiality of the information, participants' right, information consent, and practical demonstration of the interview.

Data collection techniques and tools for qualitative study: Semi-structured open ended and non-directive IDIs guides was designed in order to triangulate responses obtained by the structured questionnaire on the socio cultural and traditional aspects of ICCM services. The interview for all participants was facilitated by principal investigator. Before IDIs, the principal investigator was introduced himself; explain the general purpose of the study and topic of the discussions. The participants were informed about the tape-recorder and permission to be recorded was requested.

Operational definitions of key terms as applied in this study

ICCM: in this study, it is defined as integrated management of common childhood illness including diarrhea, Cough/pneumonia, Malaria/Fever, severe acute malnutrition, measles and ear infection carried out by HEWs at health post level.

ICCM services utilization: Number of sick under five children consultations at health post in the last four weeks for diarrhea, cough, fever, and SAM and ear infection.

Health seeking behavior: For this study, this refers to mothers' or caretakers' report on visiting Health Post or a health extension workers after recognizing her child's illness. Mothers that did not report visiting any health institution for a perceived common childhood ailment were considered as healthcare non-seekers.

Acute respiratory infection: All cases that had cough accompanied by short or rapid breathing in the last four weeks as perceived by the mothers or caretakers.

Illness: In this context does the mother or caretaker perceive childhood symptom of cough, diarrhea and fever of any under-five child in the last four weeks as.

Diarrhea: Under-five child having loose, watery or bloody stool three or more times within 24 hours with at least one episode in the last four weeks as perceived by the mothers or caretakers.

Cough: In this study, this refers to a child less than five years of age who had had episode(s) of cough in the last four weeks as perceived by the mother or caregiver.

Difficult Breathing: In this study, this refers to a child less than five years of age who had had episode(s) of difficulty breathing in the last four weeks as perceived by the mothers or caretakers.

Fever: A child less than five years of age with very high body temperature and was febrile to touch in the last four weeks as perceived by the mothers or caretakers.

Severe illness: A child was considered to have a severe illness if the child had any of the following: any general danger sign (not able to drink/breastfeed, vomits everything, convulsions, lethargic or

unconscious), severe pneumonia, diarrhea with severe dehydration, severe persistent diarrhea, persistent diarrhea, dysentery, very severe febrile disease, severe complicated measles, severe complicated malnutrition, or severe anemia.

Data quality management

Training of the interviewers and supervisors on the objective of the study, how to conduct face to face interview and how to keep confidentiality of the information was conducted. Both the interviewers and supervisors were given and assessed clarity, understandability and completeness of the questionnaire. Every day, 10% of the completed questionnaires was reviewed and checked for completeness and relevance by the supervisors and principal investigator and the necessary feedbacks were offered to data collectors in the next morning before the proceeding of the procedure. The data was stored in a secure place for confidentiality and in time when the data is need for a backup of the data.

Data analysis procedures

The quantitative data was checked visually for completeness, coded and entered into EPI info version 7.2.1.0 and exported to SPSS for window version 20.0 for analysis. Recoding and transforming of some variables were done. Frequency and graphs, tables, figures were used to describe some variables. Double data entry on 10% of questionnaires was performed to check data entry errors. The results were presented using Odds Ratio and 95% confidence intervals and $P < 0.25$ was considered as a statistically significant association between dependent and independent variables in a binary logistic regression analysis and was candidate to multiple logistic regression. Multiple logistic regression analysis was run to determine independent predictors of integrated community case management of common childhood illness utilization by under five children in the district. The fitness of the model was checked by Hosmer Lemeshow goodness of fit test.

For qualitative study, prior to analyzing the data, all IDIs were transcribed verbatim in Sidamic language and then translated into English by the principal investigator. Recorded interviews were replayed, transcribed and the data was analyzed using thematic manual analysis. Raw notes and tape recordings were used to generate transcripts in the local Sidamic language.

Ethical consideration

The actual data collection was started after ethical clearance letter obtains from Hawassa University Institutional Review Board (IRB) and support letter was obtained from Sidama zone health department. Formal letter of cooperation was taken to each Kebele from Wonsho district Health office and verbal consent

was obtained from individual participant by explaining the aim of the research. Participants informed that participation was voluntary, they have full right to refuse.

Results

Quantitative study result

Socio-demographic characteristics of respondents:

Three hundred two mothers/care givers were interviewed which made the response rate of 94.97%. The study findings revealed that 173 (57.3%) respondents were 30-years-old and above and (42.7%) were less than 30 years of age. Almost all the respondents (95.7%) were currently married or living with a partner and 4% not in union and 255 (84.4%) relation to sick child were mothers. With regard to mothers/care givers educational status, 121 (40.1%) had no formal education, 136 (45%) had primary education and 45 (14.9%) had some secondary education and above. Larger proportions 244 (80.8%) of respondents were housewife and 26 (8.6%) were farmers. Sidama were the dominant ethnic group accounting for 299 (99%) of the respondents, and the rest, 3 (1%) were Amhara. Majority 265 (87.7%) of the mothers/care takers were protestant, 16 (5.3%) were Muslim by religion. Two hundred thirty (76.2%) of them had less than 6 family members, and 72 (23.8%) stated having six and above total number in family size. About 205 (67.9%) respondents had less than 1000 and 97 (32.1%) had 1000 and more Birr average monthly income Two hundred sixty (86.1%) of respondents mentioned that total time it took to reach nearest health posts was less than one hour (Table 1).

Child characteristics of selected children: From selected sick children 79 (26.2%) were infants, while children aged 12-59 months were about 223 (73.8%). The sex composition of the sick children was 51.7% female and 48.3% male. Regarding to birth order of selected children nearly more than half (51%) from first to 2nd and the rest 3rd and above in birth order. Large proportion 62.6% of sick children were completed routine immunization and the rest, 16.2% not started, 13.2% during study period on immunization and 7.9% were defaulted (Table 2).

Mothers/caregivers advice or treatment sought and iCCM service utilization for major childhood illnesses:

About 122 (40%) of respondents reported diarrhea as the most common childhood illness relative to cough 97 (32%) and fever 54 (18%). In relation to advice and treatment seeking, 179 (59%) of the mothers/care givers were sought from any sources (i.e. home based, traditional or health facilities). More than half 166 (55%) mothers/care takers were sought from outside home and 46% were sought health facilities. ICCM service utilization at health posts among mothers/care givers was 66 (21.9%). Only 42 (23.6%) of the mothers/care

Table 1: Socio-demographic characteristics among mothers or caregivers under five children in Wonsho district, Sidaama Ethiopia, 2019 N = 302.

Characteristics	Categories	N	%
Sex of mother/caretaker	Female	47	15.6
	Male	255	84.4
Age	< 30 years	129	42.7
	> = 30 years	173	57.3
Marital status of respondent	Married	289	95.7
	Others	13	4.3
Relation of sick child to respondent	Mother	255	84.4
	Father	34	11.3
	Others	13	4.3
Educational status of respondent	Non formal education	121	40.1
	Primary (1-8) education	136	45
	Secondary and above	45	14.9
Occupation of respondent	House wife	244	80.8
	Farmer	26	8.6
	Student	17	5.6
	Others	15	5
Ethnicity	Sidama	299	99
	Amhara	3	1
Religion of the respondent	Protestant	265	87.7
	Muslim	16	5.3
	Others	21	7
Family size	< 6 family members	230	76.2
	6 and more family members	72	23.8
Average monthly income	< 1000 ETB	205	67.9
	1000 and more ETB	97	32.1
#U5 children in the family	One U5 child in the household	204	67.5
	> = U5 children in the household	98	32.5
Time take to reach nearest HP	< 30 minutes	128	42.4
	> 30 minutes	174	57.6

Table 2: Child characteristics of selected under five children in Wonsho district, Sidaama: Ethiopia, 2019.

Characteristics	Categories	N = 302	%
Age of sick child	< 12 months	79	26.2
	12-59 months	223	73.8
Sex of sick child	Male	146	48.3
	Female	156	51.7
Birth order of sick child	1 st -2 nd birth order	154	51
	3 rd -4 th birth order	98	32.5
	5 th and more birth order	50	16.6
Immunization history of the child	Not started	49	16.2
	Up to date	40	13.2
	Defaulted	24	7.9
	Completed	189	62.6

Table 3: Over all advice or treatment sought sources and ICCM utilization for major childhood illnesses among mothers or caregivers under five children in Wonsho district, Sidaama Ethiopia, 2019.

Major childhood illness and advice or treatment sought sources		Child hood illness symptoms				
		Over all	Diarrhea	Cough	Fever	Others
Childhood illnesses/symptoms		302 (100%)	123 (40%)	97 (32%)	54 (18%)	29 (6%)
Advice or treatment sought sources	From any source	179 (59%)	76 (62.2%)	62 (64%)	32 (59%)	9 (31%)
	From outside home	166 (55%)	69 (56.5%)	59 (61%)	29 (54%)	9 (100%)
	From health facilities	138 (46%)	59 (48%)	44 (45%)	27 (50%)	8 (89%)
	From health post	66 (21.9%)	32 (26%)	16 (16.5%)	10 (19%)	8 (89%)
Number of days sought advice or treatment after onset of illness	First day of onset	42 (23.6%)	23 (30%)	6 (10%)	13 (41%)	0 (0%)
	2 nd day of onset	72 (40.4%)	35 (49%)	20 (32%)	17 (13%)	0 (0%)
	3 rd and above day	65 (36%)	18 (21%)	36 (58%)	2 (6%)	9 (100%)

takers sought advice and treatment on the first day of a child's illness and 137 (76.4%) stated they only sought advice or treatment after the second day of onset of illness (Table 3).

Mothers or caregivers advice or treatment sought places for major childhood illnesses: Regarding to overall advice or treatment sought places, 66 (21.9%) from health post, 57 (18.9%) from health center, 27 (8.9%) from traditional healer and 13 (4.3%) home based-care. Advice or treatment sought for diarrhea, 32 (42.1%) from health post, 25 (32.9%) from health center, 10 (13.2%) from traditional healer and 7 (9.2%) home based-care. Advice or treatment sought for cough, 24 (38.7%) from health center, 17 (27.4%) from health post, 15 (24.2%) from traditional healer and 4 (6.5%) from government hospital. Regard with advice or treatment sought for fever, 12 (37.5%) from health post, 9 (28.1%) from health center, 5 (15.6%) from government hospital and 3 (9.4%) from private clinic.

The mothers/care takers reasons for not seek advice or treatment for common childhood illnesses: The main reasons reported by respondents for not seeking advice or treatment from health posts/health facilities were 37 (23.4%) my home far from health facility and lack of transportation, 28 (17.7%) closed health facilities especially for health posts, 25 (15.8%) it was not serious illness and considering recover by itself, 22 (13.9%) lack of drugs and supplies in HFs, 16 (10.1%) not knowing where to go, 15 (9.5%) poor service quality of offered by HEWs, and 13 (8.2%) financial difficulty.

Mothers/care takers knowledge and attitude about common childhood illness and services offered by HEWs at HPs

Regarding to mothers or care takers knowledge and attitude about common childhood illness and services offered by HEWs at HPs: Over half 160 (53%) mothers/care/takers had not past experience on any of danger signs of common child hood illnesses and 142 (47%) were recognized by at least on danger signs of common childhood illnesses. About 178 (58.9%) mothers or caregivers knew that iCCM services were provided at

their respective health post. Respondents were also asked about the symptoms that were treated at the health post. Of those who knew that iCCM services existed in their respective kebele, 208 (68.9%) of them knew that health posts provide treatment for diarrhea, 173 (57.3%) of them knew HEWs treated cough, and 151 (50%) knew HEWs treated fever symptoms. About 192 (63.6%) claimed to perceive that common childhood illness can be mild and moderate and 110 (36.4%) of the mothers perceived childhood illness as severe. Regarding to source of information about the availability of iCCM services, 126 (70.7%) mothers or care givers got from HEWs, and 27 (15%) from HDA members, while 22 (12.4%) from health workers (Table 4).

Utilization of others health extension packages at Health Posts: The study also revealed that different services were integrated. Two hundred thirty five (77.8%) mothers or caregivers indicated that they utilized health service at least once in their respective health posts. With regard the places of delivery 166 (55%) of mothers institutional delivery services for their last or current child. About 136 (45%) of mothers their respective homes to deliver their last or current child. Two hundred thirty three (77.2%) respondents were Expanded Programme of Immunization (EPI) service users. About 52.6% were Family Planning (FP) and 33.4% were Antenatal care service users (Table 5).

Factors affecting utilization of ICCM services: The result of binary logistic regression showed that age of respondent, education of respondent, time take to reach the health post, immunization status of child, perception of mothers or caregivers on severity, utilization of other health extension packages, the past experience on danger signs of childhood illness, place of birth current or last child, awareness on availability of ICCM services were found to be significantly associated with utilization ICCM services.

Education of respondent was associated with utilization of ICCM, mothers or caregivers who had attended secondary school more use ICCM more than illiterate mothers or caregivers [COR 1.1; 95% CI (0.5, 2.4)], mothers/care takers who experienced about

Table 4: Knowledge and attitude about common childhood illness services offered by HEWs at HPs among mothers or caregivers under five children in Wonsho district, Southern Ethiopia, 2019.

Variables		Number N = 302	Percent
Mother's the past experience on danger signs of childhood illness	Yes	142	47.0
	No	160	53.0
Mothers/caregivers awareness on at least one of ICCM services	Yes	178	58.9
	No	124	41.1
Awareness on diarrhea service	Yes	208	68.9
	No	94	31.1
Awareness on cough service	Yes	173	57.3
	No	129	42.7
Awareness on fever service	Yes	151	50.0
	No	151	50.0
Awareness on others common childhood illness services	Yes	63	20.9
	No	239	79.1
Source of information about ICCM services	Health extension workers	126	70.7
	Health workers	22	12.4
	HAD (1 to 5 net work) members	27	15
	Others	3	1.6
Perception of mothers or care takers about severity of illnesses	Severe	110	36.4
	Moderate	136	45.0
	Mild	56	18.5

Table 5: Utilization of others health extension packages at Health Posts among mothers or caregivers under five children in Wonsho district, Sidaama-Ethiopia, 2019.

Variables		Number N = 302	Percent
Utilization of any health service at least once from HEWs at HPs	Yes	235	77.8
	No	67	22.2
Place of birth this or last child	Home delivery	136	45.0
	Institutional delivery	166	55.0
Expanded program of immunization	Yes	233	77.2
	No	69	22.8
Family Planning	Yes	158	52.3
	No	144	47.7
Antenatal care	Yes	101	33.4
	No	201	66.6
Postnatal care	Yes	28	9.3
	No	273	90.7
Other services	Yes	65	21.5
	No	237	78.5

danger signs of childhood illness were 4 times more than utilize ICCM services mothers or caregivers did not have experience about danger signs (COR = 3.9; 95% CI [2.1, 7.1]), mothers/caregivers who knew the availability of ICCM services at their respective health post were 5 times more than utilize ICCM services mothers who didn't know the availability of ICCM services (COR = 9.8; 95% CI {4.1, 23.4}) (Table 6).

Determinants of utilization of ICCM services at HPs:

Multiple logistic regression analysis revealed that three independent predictors of mother/caregiver's ICCM service utilization at health posts. Regarding to distance of household from the health post, children living in more than 30 minutes were 3 times (AOR = 3.3; 95% CI {2.3, 24.7}), less likely to utilize ICCM service compared to children living within 30 minutes travel time to the

Table 6: Association of utilization of ICCMs and its correlates among mothers or caregivers under five children in Wonsho district, Sidaama-Ethiopia, 2019.

Independent Variable	Category	Utilization of ICCM service		Crude OR (95% CI)	P-value
		Yes	No		
Age of respondent	15-24 years	18	33	1 (ref)	0.01
	25-34 years	37	111	5.1 (2.1-12.1)	0.00
	> = 35 years	10	93	3.1 (1.5-6.6)	0.03
Education of respondent	Non formal education	14	107	1	0.04
	Primary education	39	97	0.4 (0.2-0.9)	0.02
	Secondary education	12	33	1.1 (0.5-2.4)	0.795
Time take to reach nearest HP					0.00
	< 30 minutes	48	80	12.0 (2.77-51.91)	
	> = 30 minutes	18	156	1	0.01
Immunization status of child				0.4 (0.1-2.0)	0.042
	Not started	5	44		
	Ever immunized	60	193	1	
Perception of mothers or caregivers on severity	Mild	9	47	0.95 (0.0.4-2.2)	0.033
	Moderate	21	115	2.4 (1.1-5.5)	0.05
	Severe	36	74	1	0.91
The past experience of about danger signs	Yes	47	94	3.9 (2.1-7.2)	0.00
	No	19	142	1	
Utilization of other health extension packages	Yes	61	174	1	
	No	4	63	5.5 (1.9-15.8)	0.01
Awareness on availability of ICCM services	Yes	59	119	1	0.00
	No	6	118	9.8 (4.1-23.5)	
Place of birth current or last child	Home delivery	13	123	0.3 (0.1.0-0.4)	0.00
	Institutional delivery	52	114	1	

Table 7: Multiple logistic regression analysis to identify factors affecting ICCM service utilization at HP for common childhood illnesses among mothers or caregivers under five children in Wonsho district, Sidaama-Ethiopia, 2019.

Variables	ICCM service utilization from HEWs at HP		COR (95%CI)	AOR (95%CI)
	Yes	No		
Time take to reach nearest HP				
< 30 minutes	48 (72.7%)	80 (33.9%)	12.0 (2.8-51.9)**	3.3 (2.3-24.7)*
> = 30 minutes	18 (27.3%)	156 (66.1%)	1	1
The past experience of about danger signs of childhood illness				
Yes	47 (71.2%)	94 (39.8%)	3.9 (2.14-7.13)*	1.2 (0.6-2.7)
No	19 (28.8%)	142 (60.2%)	1	1
Awareness on ICCM services offered by HEWs at HP				
Yes	59 (89.4%)	119 (50.4%)	1	1
No	7 (10.6%)	117 (49.6%)	9.8 (4.1-23.5)**	5.5 (1.3-23.7)**

1: Reference category; *P-Value < 0.05; **P-Value ≤ 0.001

health post. Mothers/care takers who experienced about danger signs of childhood illness were more likely to utilize ICCM services compared to did not have experience about danger signs (AOR = 1.23; 95% CI [0.57, 2.65]). Mothers/caregivers who knew the availability of ICCM services at their respective health post were 5.5 times more likely to utilize ICCM services as compared to those didn't know the availability of ICCM services

(AOR = 5.5; 95% CI{1.3, 23.7}) (Table 7).

Qualitative study result

Socio-demographic characteristics in detail: Ten in-depth interviews were conducted with mothers. The ages of mothers ranged between 20 and 55 years. The number of children mothers indicated to have given birth ranged from one to seven. Nine mothers were

married and one was widowed. All mothers were caring for their biological children and the average number of children in their households was three, with a range of one to six. With regard to educational status, only a minority of mothers or caregivers attended formal schooling. More than half (6) mothers unable to read and write. One mother could read and write; one attended primary school but did not complete the same. One mother stated that she attended secondary school but also failed to complete. None of the mother completed secondary school. All mothers were Sidama in ethnicity. Eight mothers were protestant, and two mothers were Muslim in religion.

In terms of household income, all mothers interviewed were housewives correspondingly majority of their husbands were mix-farmers and mostly they grow coffee, chat, inset, maize, as well as practice animal husbandry. One mother combined farming with trade. Even though it is very difficult to estimate exactly average monthly household income, the outcome of this study revealed that the household income from farming yields range between 350 and 4500 Ethiopian Birr per month.

When mothers were asked to estimate the length of time it took them to travel from their home to their respective health posts, they indicated a walk time of 5 minutes to 90 minutes. The majority indicated a walk time of between 15 minutes to 30 minutes.

During the data collection period, an attempt was made to identify equal numbers of caregivers that utilized and those that did not utilize the health post over the course of the research. Analysis of this data indicated that seven mothers had heard about ICCM services, of which five mothers did visit the health posts, two of them utilized ICCM services for their under five sick children. Three mothers reported that they did not know about availability of ICCM services at their respective health posts and from them one utilized family planning and one utilized antenatal care services. One mother never visit health post any utilize any services from HEWs.

Eight mothers stated that they had visited one or more of the following: a health post, a health center, a private clinic and/or hospital. Of these mothers, seven were able to recall the main child illness symptoms in the last four weeks of the study. Three mothers stated that their child was ill with diarrhea, two with cough, one with fever and one had severe acute malnutrition.

Seven individual interviews were held with HEWs. Their experience as HEWs ranged from one to twelve years. Two HEWs stated that they were transferred to their current post from another kebele. Five HEWs were trained on ICCM services over the past two years. Two HEWs were not trained on ICCM services because they have started work recently. The two HEWs primarily reside in the same kebele, but five of the HEWs did

not reside in the same kebele they served and residing between 30 minutes' to three-hour walk to their health post. Two health posts were served by one HEWs; four health posts were served by two HEWs and one health extension worker served one health post.

Nine woman developmental team (WDT) leaders were interviewed. Their experience as ranged from three to 10 years. WDT leaders that they had received some training on health extension packages by HEWs. All WDT leaders stated that their primary residence was in the sub-village of the kebele in which they worked.

Main childhood illness symptoms: Diarrhea, cough and fever were the main childhood illness symptoms reported by IDIs. All IDIs including HEWs were Sidamic language speakers and they use local names to describe illnesses. For example, diarrhea was referred to as "deeo", "godowa gobbara qollino" or "of oshiishiino or "godowu giddo seyaanyo dinosi". According to mothers, diarrhea relates to non-agreement of ascariasis (roundworm) with food or feeling discomfort ably with eating/drinking poor quality food/fluids. Mothers referred to 'fever' as "iibbabba" in Sidamic language. Fever, a sign of malaria, was commonly referred to as shivering' or "huxisa" by caregivers. They referred to malaria as "shekkeere" in Sidamic language. Almost no IDI respondents reported cases of malaria. This may due to majority of the district areas non-malarias. Few caretakers indicated that the presence of convulsion is a worrying sign requiring urgent action to prevent death. Such an action to perception of severity of symptoms was revealed. They reported that people would usually seek medical help when there is a perceived high risk to the health of family members.

There was and still no equivalent term for pneumonia in Sidamic language. HEWs stated that for children having pneumonia, caregivers usually describe their child's illness as "buusano", with the equivalent symptoms of coughing and shallow breathing. HEWs recommended the use of the English term, 'pneumonia' and Sidamic language term, "shombu michche".

Sources of advice or treatment

Home-based care: When asked what mothers do at home upon recognition of a child's illness, majority mothers stated they actually do nothing except pray to God and wait for the child's recovery. However, when probed about herbal treatments, a large number of them indicated a variety of actions taken within the home before going to health facilities for care or treatment.

I have given "ameessa" to my child when he ill with diarrhea. Because the color of stool looks like "ameessa" illness. However, my child became worse. Later I have taken him to health post. However, I did not tell that to HEW. Because she will not agree and tell us this is bad for our child. (IDI, mother).

We always tell that the mothers go to health post when their children sick. However, they do not accept our teachings and use herbs, and religious treatments rather than go to the health post for ICCM services. (IDI, WDT).

Traditional herbs or plants like 'sunkurta', 'michchete xagichchi', 'damakase' and 'baarzaafe', are reported to be common in the gardens of most community households as they are easy to grow and sustain. Added to this, they are commonly prepared as herbal treatments for diarrhea, cough/pneumonia, fever, and headache as well as skin rash.

Traditional healers and religious leaders: In addition to gathering herbs themselves, mothers and WDT stated that some caregivers have reduced the frequency of their visits to traditional healers. Traditional healers often referred to as 'elders' are respected by community members for their knowledge of "xagicho" or traditional medicine. Traditional healers are usually not paid for their services. Some traditional healers were elderly family members. Caregivers buy herbs and medicines from individuals. Mothers and WDTs reported that caregivers hardly utilize traditional healers' services. However, they sometimes go to traditional healers when their children are unwell.

In addition to the use of services of traditional healers, mothers and WDTs also stated that religious leaders or healers played significant roles in a child's illness in the study areas. Religious leaders or healers were often called upon and utilized for serious illnesses regardless of the type or cause of illness.

Local shops and private clinic: Some WDTs in individual interviews suggested that local shops, "suuqe, or dikko" played large roles in deterring caregivers to take their sick children to health facilities in rural communities. Typically, a shop is located in each sub-village in a kebele. Some shops in certain sub-villages stock medicines that are sold to community members.

Local community shops have been an ongoing challenge for our work in the communities. Many caregivers prefer local shops to buy drugs rather than bring their children to our health post. (IDI, HEW).

Health Post: Caregivers are reported in this study to utilize health posts, and they did so for a variety of reasons. Most of the mothers and WDTs claimed to have used the health posts.

I preferred health post when my child was sick. Because the services and medications were, free from payment. My child was also improved quickly. IDI mother

The participants noted that they were offered free medical services and medication at health posts. Added to this, they were also provided advice by HEW on how to support ill children. The HEWs were generally regarded as highly knowledgeable persons on childhood

illnesses, and most of caregivers and WDTs appreciated the professional and health care support they tend to offer.

Almost all respondents stated that they trusted and valued HEWs as members of their communities. These respondents went on to state that HEWs are not only familiar with their communities and children, but they were also willing to offer treatment to children in need have care.

"In previous years in this community, many children died from diarrhea, pneumonia and severe acute malnutrition. Today, this situation has changed since the government implemented the health post and HEW in our community. I am thankful to our government because we have not experienced death of children for while". (IDI, WDT).

Reasons by mothers/caregivers for not visiting health post for ICCM Services

Some respondents stated their reason for not visiting health posts or utilizing key child health interventions services at health post. Examples of these reasons include awareness on availability of services, accessibility or distance to services, financial constraints, sociocultural and religious barriers.

Awareness on availability of services: The majority of caregivers were aware of the location of the health post and HEWs assigned to the health post. Many mothers who had previously used the health post and minority number of mothers, however, were unaware of or uncertain about the availability of ICCM services for common child illnesses.

I knew availability of immunization and I have taken my child to health post. However, I did not heard about ICCM services. (IDI, mother)

I knew availability of health post in our community. However, I did not know the services are available at health post. (Another IDI, mother)

Accessibility or distance to services: In Ethiopia, most health posts in rural areas only operate for short periods during the day. HEWs and caregivers both noted that HEWs were often absent from the health post during established working hours (8:30 am - 5:30 pm). For instance, some may commence their functions, say at midday and close before 5 pm. Such opening and closing hours are functions of the view that some HEWs do not reside in the 'kebeles' where they work. Another reason was that the health posts are generally located one-hour walk away from most caregivers' households. Generally, health posts were difficult to access. This was because of the poor conditions of the roads, a view shared by HEWs and WDTs.

I took my child to health post when she was ill with cough. However, health post was closed and I took her to traditional healer. (IDI, Mother)

Financial difficulties: It is important to state the health care services provided at health posts were free for all caregivers. However, most caregivers were of the opinion that any visit to a health post could result in referral to a health centre. Such referrals may have financial implications, as narratives from some caregivers indicate that they paid for the services at the health centers they attended. Some caregivers narrated during this study instances when financial difficulties prevented or delayed care seeking. Some caregivers complained of lack of control over household finances. According to these caregivers, the lack of control over household finances created additional financial barriers to seeking care for their children, particularly in the event of a disagreement with their spouse about the need for and the path of treatment for their children.

Discussion

This community based cross sectional study was assess the utilization of ICCM and associated factors among mothers or caregivers under five children in Wonsho district, Sidaama Region: Ethiopia. Three hundred two mothers/care givers were interviewed which made the response rate of 94.97%.

The main symptoms of childhood illnesses revealed in this study were diarrhea (40%) cough (32%), fever (18%) and others 6%. This finding quite similar with study done in Agarfa woreda, Oromia that reported diarrhea (28.9%), fever (24.9%), cough (36.4%) and others 10% but higher than study done in three regions (Amhara, SNNPR and Tigray) in Ethiopia 10% for diarrhea, 19% for cough and 16% for fever [16,18]. These quantitative data were supported by qualitative data, majority IDIs (mothers/caregivers, WDT and HEWS) reported that diarrhea, cough and fever were the main childhood illness symptoms in their community.

Reported advice or treatment seeking sources by caregivers of a child sick with diarrhea, fever and/or pneumonia in the four weeks preceding the survey, 59% caregivers were sought advice or treatment from any sources (4% home based care and 55% from outside home). About 46% (48% for diarrhea, 45% for cough and 50% for fever) mothers or caregivers were sought advice or treatment sought from health facilities. This finding was in agreement with EDHS 2016 reported that 42.6% for diarrhea, 29% for cough and 34.3% for fever [19]. Among health facilities, 66 (21.9%) sought care from HEWs at the health post. This finding was higher than two studies conducted in Oromia region by Bryan C Shaw, (9.3%) and by Mersha Gorfu, (10.5%) [18,20]. These discrepancies might be due to socio-cultural differences that does not encourage health care seeking behavior towards childhood illnesses, differences in accessibility of health facilities and awareness on availability of ICCM services at health posts. The other reason may be due to time variation between studies,

as potential health service coverage has increased dramatically in the country in recent years.

Regarding to determinants of utilization of ICCM services from HEWs at the health posts, increasing distance of a mother/caregiver and child's household from the health post less likely to be taken to the health post for seeking advice or treatment. Children living in more than 30 minutes were 3 times less likely to utilize ICCM service compared to children living within 30 minutes travel time to the health post. This quite similar with study done in Oromia region by Bryan C Shaw those mothers/caregivers who residing between 1-2 hours less likely and caregivers residing more than 2 hours less likely to use the health post compared to caregivers residing less than a 30-minute walk from the health post.

Another finding of this was, when mothers/caregivers were asked what the common reasons they did not seek care from HPs, 23.4% reported that distance was a problem them. These echoed with study conducted in Oromia when HEWs were asked what they thought were the common reasons caregivers did not seek care from them, 23% reported that distance was a problem for caregivers. These quantitative data were supported qualitative by data, most IDIs (mothers/caregivers, WDT and HEWS) reported that health posts were difficult to access because of the poor conditions of the roads. These also agreement in qualitative by data from Oromia, HEWs attributed the limited utilization of health care services to distance of caregivers' homes to health posts and another study in Amhara, SNNP, and Tigray found that distance to the health post and not having a road for vehicular access to the health post were associated with utilization of health post services [21,22].

Another highly significant determinant for ICCM service utilization was awareness of the availability of services at the health post. Mothers/ givers knew who availability of ICCM services at their respective health post were 6 times more likely to utilize ICCM services as compared to those didn't know the availability of ICCM services. This finding was also in agreement with survey was conducted four regions in Ethiopia (Amhara, Oromia, SNNP, and Tigray) in December 2012 and in Oromia region (2013) a major reason for not using HEW services was a lack of awareness of the services offered, or of the benefits of services, among communities [16,23]. These supported by qualitative finding, WDT members respond that caregivers did not know about availability of treatments, especially for pneumonia and fever. Some people thought HEWs only refer patients to health facilities. These also agreement in qualitative by data from different regions, Lack of awareness of services for newborns, which are relatively new, was reported as the main reason to not visit health facilities for advice or treatment of childhood illnesses [12,14,24].

Significant relationships were also found for knowledge of mothers/caregivers about danger signs of childhood illness. Mothers/care takers who experienced about danger signs of childhood illness were more likely to utilize ICCM services compared to do not have experience about danger signs. This finding was in agreement with study done in Nigeria and Kenya reported that a major barrier to care seeking globally was the lack of caregiver knowledge of signs, symptoms, and danger signs of childhood illness [3,11,25,26].

Limitations

Recall bias

The study was a community based cross sectional design and limited only to Woreda, its findings might not reflect that of the other zones or regions of the country as there are differences in socio-cultural, geographical features, intensity of health promotion activities, health coverage, local staff's skills as well as availability of different intervention by non-governmental organizations.

Conclusion and Recommendations

Conclusion

To improve access to life-saving healthcare, government of Ethiopia has adopted a global strategy entitled ICCM of Common Childhood Illness, particularly for the management of pneumonia, malaria and diarrhea, within the HEP. ICCM programme was officially launched on 23 February 2010. With the ICCM initiative, HEWs are able to manage the major causes of child and newborn death at the community level. Evaluations of the scale-up of ICCM showed that the strength of program implementation (training, supervision, supply of commodities) was strong and the quality of care provided by HEWs was relatively high. Despite these improvements, utilization of CHWs delivering ICCM services is often low. The importance of access barriers and demand-side factors are increasingly realized as major challenges for improving the ICCM strategy and achieving program goals related to increasing coverage and reducing child mortality. This study provides valuable information on reasons for low utilization of HEWs delivering ICCM services at the health post in rural community.

It is noted in this study, the proportion of the ICCM services utilization at health posts by caregivers of children sick with common childhood illnesses as relatively higher than previous national and regional reports. Nevertheless, it is reckoned that significantly high numbers of caregivers of children sick with common childhood illnesses are not using ICCM services utilization at health posts. The most common childhood illnesses of the study site were diarrhea, followed by cough and fever. Mothers or caregivers seek advice or treatment from HEWs at health posts two or more days

after presenting signs and symptoms of these illnesses. The study findings revealed that the factors that may determine ICCM service utilization. Examples of these include distance of a mother/caregiver's house from the health post and lack of transportation, awareness on availability of ICCM services at their respective health post and the experience about danger signs of childhood illness.

Added to this, the delay in seeking advice or treatment from HEWs at health post is function of caregivers' tendency to home- based care and visit traditional healers and use of herbs to treat childhood illnesses, absence of HEWs in health post, considering the illness recover by its self, lack of drugs and supplies in HPs, poor service quality and financial difficulties.

Conflicts of Interest

We declare that we have no conflict of interests.

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