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Assessment of Urban Health Extension Package Utilization and Healthcare Seeking Behavior Among Model and Non-model Households in Addis Ababa, Ethiopia: A Comparative Community Based Study

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Abstract

Background: Ethiopia has been implementing the Urban Health Extension Program (UHEP) at the community level since 2009. The program was a pro-poor and cost-effective approach that aimed to enhance the utilization of urban health extension program packages and empower community healthcare-seeking behavior. This study was conducted to compare the utilization and healthcare-seeking behaviors of urban health extension program packages and the healthcare-seeking behaviors of model and non-model households.

Methods: A community-based comparative cross-sectional study was conducted among 594 female household heads (297 models and 297 non-models) using a structured face-to-face interview. A bivariate and multivariable logistic regression analysis was employed to identify associated factors. A p-value less than 0.05 and an adjusted odds ratio (AOR) with a 95% confidence interval were carried out to identify significant factors.

Results: Urban health extension program package utilization was 78% among model and 64.2% among non-model female households. A total of 75.5% of model and 65.2% of non-model female household heads had appropriate healthcare-seeking behavior. Moreover, having information about UHEPs (AOR = 2.35, 95% CI = 1.08 - 3.42), the frequency of home visits by UHEWs (AOR = 2.12, 95% CI = 1.01 - 3.13), knowledge about UHEPs (AOR = 3.14, 95% CI = 2.43 - 4.47), and household graduation status (AOR = 3.052, 95% CI = 2.024 to 5.113) were significantly associated with urban health extension program package utilization and healthcare-seeking behaviors.

Conclusion: In terms of utilization, the overall urban health extension package favors model female household heads over the non-model female household heads. As a result, raising awareness, frequent home visits, and focusing more on disease prevention and control packages will boost the adoption of urban health extension packages.

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1. Introduction

Globally, urban health is underutilized and neglected, and there are health inequalities, particularly in low- and middle-income countries [1]. By 2050, nearly 60% of Africa's population is expected to live in cities, which are home to 35-40% of the world's children and adolescents [2]. According to UN-Habitat, the proportion of the urban population living in slums in developing countries has decreased from 39.4% in 2000 to 29.7% in 2014 [3]. Since 1997, Ethiopia has been implementing successive health sector development plans and has made notable advancements in expanding access to healthcare services and enhancing health outcomes [4].

The urban health extension program (UHEP) was implemented in Ethiopia, and the deployment of specially trained urban health extension professionals (UHE-Ps) began in 2009 with the goal of improving community utilization of urban health extension packages and healthcare-seeking behavior [5][6]. Urban health extension professionals (UHE-Ps) spend more than 75% of their time in the community educating residents about urban health extension program packages as well as identifying and preparing model households [7]. Model households (HH) are those that complete at least 75% of the model family training out of 60 training hours and implement and use packages at the household level, implying that households have acquired the necessary knowledge, skills, and behavioral changes to help them have better control over their health. Healthcare-seeking behavior (HSB), on the other hand, is the action of persons visiting any health facility for modern treatment rather than traditional medical care [8].

Evidence from Ethiopia revealed that only 59.2% and 72.8% of participants use urban health extension at the household level among model and non-models, respectively [9][10]. Several factors were reported for the poor utilization of urban health extension packages, including sociodemographic and economic factors, household factors such as occupation,

household income, frequency of home visits, model household training, and graduation from a model household [11][12][13]. Evidence also showed that literacy, educational status, perceived illness, income, and treatment costs were some of the predictor factors for health-seeking behaviors [14][15].

Moreover, health care policies and programs' planning requires knowledge about healthcare seeking behavior for early diagnosis, effective treatment, and appropriate intervention [16]. Besides, identifying gaps and having regular and up-to-date data on model and non-model households are critical for evidence-based decision-making and baseline data for any stakeholders to take action. As a result, the aim of this research was to compare the utilization of urban health extension packages among model and non-model female household heads in Addis Ababa, Ethiopia, in 2022.

2. Methods

2.1. Study setting

The study was carried out in Bole sub-city, Addis Ababa, Ethiopia. Addis Ababa is composed of eleven sub-cities with an estimated population of 5,006,000. Among these, 47.5% were males, and the remaining 52.5% were females [17].

2.2. Study design and population

A community-based comparative cross-sectional study design was used to assess the urban health extension program package utilization and healthcare-seeking behaviour among model and non-model household heads.

2.3. Eligibility criteria

The study included female model and non-model HH heads over the age of 18, as well as those who had lived in the study area for more than a year. The study did, however, exclude female household heads that were seriously ill and unable to communicate.

2.4. Sample size determination and sampling procedure

The sample size was calculated using the two-population proportion formula by applying Epi-Info version 7.2.1 software with the following assumptions: 95% confidence interval, 5% margin of error, 80% power, 1:1 model-to-non-model ratio, design effect of 2, and 10% non-response rate. In the study conducted in Ethiopia, knowledge was 80.7% [11] and urban health extension package utilization was 66.6% [9]. Since studies were conducted only on model households and there is no literature on non-model households, we assumed 50% of the proportions for non-model households.

$$n = \frac{\left(Z_{\alpha/2} + Z_{\beta}\right)^2 X \left(P_1\left(1 - P_1\right) + P_2\left(1 - P_2\right)\right)}{\left(P_1 - P_2\right)^2}$$

Therefore, the final sample size was 594 households (297 model and 297 non-model household heads). The study participant model and non-model female household heads were selected by using a multistage sampling technique. The study area was divided into 15 districts at the initial stage; four districts were randomly selected by lottery methods.

In the second stage, because there was no kebele structure in the Addis Ababa city administration, four ketena (the lowest administrative units in a kebele) were chosen at random, and proportional sample size allocation was done in each ketena. The total number of model and non-model female household heads was then obtained from the woreda health office. A sampling frame was prepared for each model and non-model female household head, and the first households were chosen at random from a list of registrations listed by the names of household heads in each ketena. Using the first household as an index, a simple random sampling technique was used to obtain the required sample size.

2.5. Study variables and measurement

The dependent variables in this study were the use of urban health extension program packages and healthcare-seeking behavior. Socio-demographic factors, distance to the health facility, medical cost, perceived severity of the disease, disease condition, quality of health service, referral linkages, health facility visit, understanding of packages, source of information, communication skills, training, being a model household, home visits/frequency of visits, traditional healer, and holy water were the independent variables.

The utilization of model and non-model female household heads in urban health extension program packages was measured by the use of different components of the packages at the household and health facility levels. Participants who scored 75% were considered to have high utilization (used at least 12 packages from 15 packages), 60-74% moderate (9-11 from 15 packages), and ≤ 60% low (≤ 9 from 15 packages). Furthermore, healthcare-seeking behaviors were classified as appropriate or inappropriate. Participants who seek and visit healthcare consultation in a health facility are classified as appropriate, whereas those who visit holy water, traditional healers, pharmacies or drug stores, self-treatment (treating one's health without medical supervision or intervention), and stay at home during illness are classified as inappropriate healthcare-seeking behaviors.

2.6. Data collection procedures

The minister of health's urban health extension program implementation guidelines, literature, and the Ethiopian demographic health survey questionnaire were used to create a structured questionnaire [9][11][17]. The data collection questionnaire was written in English first, then translated into Amharic. Before data collection, the data collection tools were pre-tested with 5% of the total sample size in Yeka sub-city, Addis Ababa, and modifications were made accordingly. Four data collectors and two supervisors participated, and one-day training was given.

2.7. Data management and analysis

All questionnaires were reviewed for completeness and errors before being entered into Epi Info version 7.2.1.0 and

SPSS version 26 software for analysis. Bivariate logistic regression analyses were used to identify potential factors related to the use of urban health extension packages. To control confounding factors and determine the relationship between independent and outcome variables, multivariable logistic regression analysis was used. The 95% confidence interval and a p-value less than 0.05 were used to assess the degree of association between dependent and independent variables.

3. Results

3.1. Socio-demographic and economic characteristics of the respondents

A total of 587 participants were successfully interviewed, including 294 model and 293 non-model female household heads, for a response rate of 99%. The average age of the study participants was 36.46 years, with an SD of 8 years. Both model and non-model female household heads had three children on average. The average monthly income of participants' model female household heads was 3671, with a standard deviation (SD) of 1184, while non-model female household heads earned 3524.91, with an SD of 1107 Ethiopian Birr (Table 1).

3.2. Knowledge status of households towards urban health extension packages

The majority of study participants, 264 (90%) model and 213 (73%) non-model female HH heads, had heard about the urban health extension program, and UHE-Ps were the source of information for 227 (77%) of model and 82 (28%) of non-model HH heads.

Among the study participants, 247 (84%) model and 159 (54%) non-model female HH heads were aware of the components of the urban health extension program package. The most commonly known and reported packages by model female HH respondents were 257 (87%), 247 (84%) (water supply), latrine and excreta disposal, and 239 (81%) (hygiene and environmental sanitation), solid and liquid waste disposal, while non-model HHs had 221 (75%), 217 (74%) (water supply), solid and liquid waste disposal, and 216 (74%), family planning.

On the other hand, the model female HH participants knew and reported the fewest packages: 83 (28%), first aid and emergency measures, 90 (31%), mental health, and 109 (37%), rodent and insect control, while non-model HH participants knew and reported the fewest packages: 62 (21%), first aid and emergency measures, 66 (24%), malaria prevention, and 74 (25%). In general, participants' knowledge status toward UHEPa was assessed using a mean score of 75-100% classified as good knowledge, 60-75% as moderate knowledge, and less than 60% as poor knowledge. According to this, model female HH heads had good knowledge with a mean score of 221 (75%), whereas non-model female HH heads had moderate knowledge with a mean score of 181 (64%).

3.3. Healthcare seeking behaviors of households

The overall healthcare-seeking behaviors of the study participants were 339 (78%), with 184 (79%) model households and 155 (77%) non-model households. Only 139 (76%) model households and 131 (65%) non-model households had

appropriate healthcare-seeking behaviors among those who sought health care. In terms of health care consultation location, the health center was the most common location where 189 (65%) model and 94 (47%) non-model households sought health care. Other places visited during illness included a pharmacy or drug store (10%), a private clinic (11%), and homemade treatment (15%) for model households, and a pharmacy (23%), a private clinic (18%), homemade treatment (9%), and a visit to traditional healers (holy water) (4%) for non-model households.

Among the participants, 48 (21%) model households and 46 (23%) non-model households did not seek health care anywhere during the sick period (illness). The main reason for not seeking health care was the distance to the health facility for both model and non-model HHs, 72 (37%), and 68 (32%), respectively. Quality of service (33%), lack of money (19%) for model female HH heads, lack of money (30%) for non-model female HH heads, and symptoms not severe (28%) were the other reasons for not seeking health care. Participants in the study, 254 (86%) model and 189 (65%) non-model HHs, reported that UHEP was important in increasing healthcare-seeking behaviors. In general, 161 (88%) model and 151 (75%) non-model HHs practiced appropriate health care-seeking behavior, while the remaining 23 (13%) model and 50 (25%) non-model HHs practiced inappropriate healthcare-seeking behavior (Table 2).

3.4. Family health package utilization of households at the health facility level

Two hundred eight (71%) model HHs participants and 183 (63%) non-model HHs participants visited health facilities. The most common reasons for both model and non-model household participants visiting health institutions were disease diagnosis and treatment, which accounted for 83 (40%) model and 50 (24%) non-model HHs. On the contrary, the main reasons for not visiting health institutions were the long distance to health facilities for 43 (50%) model and 19 (17%) non-model HH participants (Table 3).

In terms of family health package use, 142 (48%) model and 136 (46%) non-model HHs used various types of family planning methods. The overall delivery rate was 156 (88%), with 74 (91%) model and 82 (85%) non-model HHs participants having their deliveries at the health facility level. In addition, 120 (85%) of the infants in the model HHs and 126 (77%) of the non-model HHs were vaccinated. Based on community perception, the majority of model HHs study participants rated the quality of health services as very good (49.3%) and non-model HHs as good (49.5%) (Table 3).

3.5. Environmental health package utilization at household level

Two hundred fifteen (73%) model and 154 (53%) non-model household participants had their homes visited by UHE-Ps. In terms of the frequency of household visits conducted by UHE-Ps, 196 (67%) had at least one visit per month for model households, and 83 (54%) had at least one visit per quarter for non-model households.

Concerning the use of environmental health packages, more than three-fourths of the participants, 254 (86%) model households, and 218 (74%) non-model households, had different types of latrine facilities in their homes. Only 75 (30%) of the model households and 53 (24%) of the non-model households had a handwashing station near the latrine. More than two-thirds of participants, 247 (84%) model households and 212 (72%) non-model households, had a solid waste disposal

site, with the majority of 166 (67%) model households and 132 (62%) non-model households disposing of solid waste into covered containers. A total of 227 (77%) model households and 188 (64%) non-model households' participants had liquid waste disposal drainage systems in their homes (Table 4).

3.6. Disease prevention and control package utilization in households

UHE-Ps' role in this package was to provide health education and make referral connections. Based on this, 229 (78%) model and 161 (55%) non-model HHs participants received tuberculosis health education. During coughing for more than two weeks, the majority of model HHs (217%) and non-model HHs (132%) visited the HF for diagnosis and treatment. According to 194 (66%) model and 157 (54%) non-model HH participants, using an insecticide-treated bed net might help prevent malaria. Among model HH participants, 254 (86%) and 197 (67%) non-model HHs received HIV/AIDS health education, with 155 (53%) model and 85 (29%) non-model HHs receiving HIV testing. Only 56 (19%) model and 45 (15%) non-model HHs had first aid kits in their homes, as did 199 (68%) model and 164 (56%) non-model HHs (Table 5).

In general, the overall urban health extension package utilization was 416 (71%), of which 228 (78%) were model and 188 (64.2%) were non-model HH female HH heads. On the contrary, based on the study participants' responses, the main reasons for not implementing and utilizing UHE-Ps for the model HHs were 33 (50%) that some components are not important and for non-model HHs 45 (43%), which I do not know how to use (Table 5).

3.7. Factors associated with urban health extension program package utilization

The bivariate logistic regression analysis revealed that hearing (having information) about UHEPs, income, occupation, understanding of UHE-Ps, perception of service quality, being model HHs, home visits, and the frequency of home visits by urban health extension workers were all significantly related to the utilization of urban health extension program packages at a p-value of less than 0.25. However, variables like age, educational status, marital status, religion, and family size had no significant association with UHE-Ps utilization.

In the multivariable logistic regression analysis, only having information about UHEPs, frequency of home visits, understanding the UHE-Ps, and being model graduated HHs were predictors of UHE-Ps utilization at a p-value of less than 0.05.

As a result, participants in the study who were regularly contacted by urban health extension workers were more than twice as likely to utilize UHE-Ps (AOR = 2.12, 95% CI = 1.01 - 3.13) than those who were not frequently visited. Model female HH heads who heard about urban health extension programs were more than two times more likely to utilize the UHEPs compared to their counterparts (AOR = 2.35, 95% CI = 1.08 - 3.42). Model female HH heads who understood the urban health extension program packages were more than three times more likely to use the UHEPa (AOR = 3.14, 95% CI = 2.43 to 4.47) than those female HH heads who did not understand the packages. Moreover, model female HHs who graduated were nearly three times more likely to use the UHEPa than non-model HHs (AOR = 3.052, 95% CI = 2.024 to 5.113) (Table 6).

4. Discussion

This study attempted to assess and compare the utilization of urban health extension program packages by model and non-model female household heads. The overall knowledge status on UHEPa was moderate among participants, with model female household heads having a higher knowledge status than non-model female household heads. This disparity could be attributed to the presence of frequent home visits, during which UHE-Ps provided health education among model households.

In the current study, the most frequently mentioned UHE-Ps components by both model and non-model female household heads were immunization, latrine and excreta disposal, and solid waste disposal; on the other hand, the least frequently mentioned packages by both model and non-model female household heads were first aid, mental health, and malaria prevention and control activities. The findings are similar to those of a study conducted in Addis Ababa, Ethiopia [7][11], in which solid waste, immunization, and latrine and excreta disposal were the three most mentioned packages, while first aid, malaria prevention and control, and mental health were the least mentioned. Furthermore, this consistency could be due to similarities in the study setting, socio-demographic characteristics, and a lack of attention.

The findings are also consistent with a systematic review conducted in Ethiopia from 2003 to 2018 on the success and challenges of health extension programs, which revealed that family planning, immunization, solid and liquid waste disposal, and latrine utilization were the most frequently mentioned packages [14]. The current knowledge status of households on urban health extension packages was higher than study findings from Gondar, and Hosanna town in Southern Ethiopia, where 65.3% and 42% of participants had good knowledge of UHE-Ps [15][16]. This inconsistency could be explained by differences in study settings and socio-demographic characteristics.

The study's findings were also consistent with a study conducted in the Hadiya Zone, South Ethiopia, where 68.3% of participants had good knowledge of UHE-Ps [18], but lower than in Addis Ababa[11]. The absence of model HH training, a low commitment, and the current COVID-19 situation in AA restrict UHE-Ps' frequency of home visits to given health education activities, which could be reasons for this difference. The overall urban health extension program prioritizes the use of model female HH heads over non-model female HH heads. This finding was consistent with a systematic review conducted in Ethiopia from 2003 to 2018, which found that model HHs used more health extension packages than non-model HHs [19]. This disparity could be explained by the presence of frequent home visits, health education, and demonstrations of various packages at the household level during home visits.

The current study found that 29.6%, 59.5%, and 42% of participants in AA, Gondar Amhara region, and Hossana town, Hadiya Zone, South Ethiopia, use UHE-Ps [3][15][16]. The current study's findings were nearly consistent with a study conducted in Bishoftu, Oromia region, which found that 72.8% of participants used UHE-Ps [20], but lower than a study conducted two years ago in AA, where 86% of participants used UHE-Ps [11]. The absence of model HH training, the restriction of UHE-P home visits, the low commitment, and the lack of supportive supervision and feedback could all be reasons for this inconsistency. Evidence also indicated that one of the challenges to implementing and using HEP was the presence of limited supportive supervision [19][21].

Furthermore, the current study identified that, having information, understanding different package components, frequency of home visits, and model household graduation status were predictors of UHEPa utilization.

The current result is supported by the study conducted in AA[7][11], west Gojjam zone, Amhara region [22], Ambo town, Oromia region [23], and the systematic review done in Ethiopia[14], in which the understanding of the packages, frequency of home visits, being model graduated HHs, and monthly income were significantly associated with UHEPa utilization. The finding is also consistent with the other study carried out in Gondar, Amhara region, and the Sebeta Hawas district, Oromia region, which indicated that the understanding of packages was significantly associated with urban health extension services and maternal and child health package utilization [10][15][24][25]

In this study, the frequency of home visits was higher in model female HHs than in non-model female HHs. The results in the model female HH heads were consistent with the MOH UHEP implementation guideline [26][27] but lower than the results in Addis Ababa [11] and Hosanna town, Hadiya zone, south Ethiopia[18]. This disparity could be attributed to COVID-19's restriction of UHE-P home visits and the presence of a large disparity in the proportion of UHE-Ps to HHs; one UHE-P is expected to cover 500 HHs [26].

According to the study participants' responses, the main reasons for not using the UHE-Ps were a lack of knowledge about some of the package components, some of the packages being unimportant, and some costing or requiring money. According to a study conducted in the AA and Akaki districts of the Oromia region, the main reasons for not using packages were some components that were not important, were not prepared well, and required money [28][29].

Limitations of the study

Because the study used a cross-sectional study design with only one point in time, observation and interview recall bias were possible, and it was difficult to identify a cause-and-effect relationship.

5. Conclusion

Based on the findings of this study, it can be concluded that household status, both model and non-model households, had an effect on UHE-Ps utilization. Understanding packages, frequent home visits, income, and being a model household graduate were significantly associated with UHE-Ps utilization. Therefore, providing model household training, frequent home visits, awareness creation on different components of packages, and giving more attention to disease prevention and control packages are essential to increasing UHE-Ps utilization of HHs.

Tables

Table 1. Socio-demographic characteristics of the study participants

No	Variables	Model HHs		Non-model HHs		Total	
		No.	(%)	No.	(%)	No.	(%)
1	Age						
	19-29	68	23	68	23	136	23
	30-40	129	44	132	45	261	45
	41-51	63	21	61	21	124	21
	51-62	34	12	32	11	66	11
2	Marital status						
	Single	37	13	41	14	78	13
	Married	208	71	196	67	404	69
	Divorced	29	10	33	11	62	11
	Widowed	20	6	23	8	43	7
3	Educational status						
	Illiterate	57	19	65	22	122	21
	Read and write	41	14	44	15	85	15
	primary school	64	22	69	24	133	23
	secondary	76	26	70	24	146	25
	Certificate& above	56	19	45	15	101	17
4	Occupation						
	Housewife	183	62	173	59	356	61
	Government employs and others	111	38	120	41	231	39
5	Family size						
	0-3	183	62	173	59	356	61
	4-6	111	38	120	41	231	39
6	Monthly Income						
	1550-1900	43	15	47	16	90	15
	1901-5200	251	85	246	84	497	85

Table 2. The healthcare-seeking behaviors of model and non-modelhouseholds

No.	Variables	Model HHs		Non-model HHs		Total	
		No.	%	No.	%	No	%
1	Disease Status						
	Yes	232	79	201	69	433	74
	No	62	21	92	31	154	26
2	Seek healthcare consultation						
	Yes	184	79	55	77	339	78
	No	48	21	46	23	94	22
3	Consultation Place						
	Health center	121	66	101	65	222	66
	Private clinic	40	22	24	16	64	19
	Self-treatment	18	10	19	12	37	11
	Homemade treatment	5	3	7	5	12	4
	Traditional healers/Holy water	0		4	3	4	1
4	Healthcare-seeking practices						
	appropriate healthcare-seeking behaviors	161	88	125	75	286	81
	Inappropriate healthcare-seeking behaviors	23	13	30	22	53	19
5	Estimated walking time to HF (Distance to HF)						
	<30 minutes	49	21	42	15	91	32
	≥30 minutes	112	49	83	29	195	68
6	Time for health care seeking during illness						
	Immediately	124	53	83	41	207	48
	No improvements	86	37	90	45	176	41
	Unable to eat or drink	22	10	28	14	50	11
7	Reason for not seeking health care						
	Symptoms not severe	23	12	59	2	82	20
	Lack of money	36	19	65	30	101	25
	Distance to HF	72	37	68	32	140	34
	Quality of service	64	33	22	10	86	21
8	Referral linkage						
	Yes	156	67	72	36	228	53
	No	76	33	129	64	205	47
9	Urban health extension program increases healthcare-seeking behaviors						
	Yes	254	86	189	65	443	76
	No	40	14	104	35	144	25

Table 3. Health service utilization of model and non-model households

No	Variables	Model HHs		Non-model		Total	
		No.	%	No.	%	No.	%
1	Visit health Institution						
	Yes	208	71	183	63	391	67
	No	86	29	110		196	33
2	Reason for visiting Health institution						
	Immunization	50	24	45	25	95	24
	Family Planning	45	22	36	20	81	21
	ANC & delivery	30	14	9	5	39	10
	Diagnosis and treatment	83	40	93	51	176	45
3	Reason for not visiting the Health Institution						
	Transportation	26	30.2	7	6.4	33	17
	Lack of knowledge	6	7	66	60	72	37
	Distance to health facility	43	50	19	17.3	62	32
	poor quality service	11	12.8	18	16.4	29	15
4	Community perception of quality health service						
	Very good	145	49.3	102	34.8	247	42
	Good	141	48	145	49.5	286	49
	Poor/Bad	8	2.7	46	15.7	54	9
5	Family planning method user						
	Yes	142	48	136	46	278	4
	No	152	52	157	54	309	53
6	Infant Vaccinated						
	Yes	120	85	126	77	246	81
	No	21	21	37	23	58	19
7	Delivery attended at health Institution						
	Yes	74	91.4	82	85	156	88
	No	7	8.6	14	15	21	12

Table 4. Utilization of environmental health packages by model and non-model households

No.	Variables	Model HH		Non-model HH		Total	
		No.	%	No.	%	No.	%
1	Availability of latrine facility						
	Yes	254	86	218	74	472	80
	No	40	14	75	26	115	20
2	Type of latrine facility						
	Flush latrine	24	9	16	7	40	9
	Ventilated improved Pit Latrine	68	27	69	32	137	29
	Traditional pit latrine	162	64	133	61	295	63
3	Share a latrine facility with other households						
	Yes	46	18	73	34	119	25
	No	208	82	145	67	353	75
4	How often use the latrine						
	Always	248	98	213	98	461	98
	Sometimes	6	2	5	2	11	2
5	Hand-washing facilities near to latrine						
	Yes	75	30	53	24	128	27
	No	179	70	165	76	344	73
6	Time for washing hands						
	Before eating	0		46	16	46	8
	Both before and after eating	183	62	210	72	393	67
	Before & after eating and after cleaning compounds	111	38	37	13	148	25
7	The solid waste disposal system						
	Yes	247	84	212	72	459	78
	No	47	16	81	2	128	22
8	Types of solid waste disposal system						
	Disposed to covered container	166	67	132	62	298	65
	Disposed to open container	81	33	57	27	138	30
	Burning	0		8	4	8	2
	Thrown anywhere	0		15	7	15	3
9	Liquid waste disposal drainage system						
	Yes	227	77	188	64	415	71
	No	67	23	105	36	172	29

Table 5. Disease prevention and control packages in model and non-model households

No	Variables	Model HHs		Non-model		Total	
		No.	%	No.	%	No.	%
1	Health education on tuberculosis						
	Yes	229	7	161	55	390	66
	No	65	22	132	45	197	34
2	What to do during cough for more than two weeks						
	visit HF for diagnosis	217	74	132	45	349	60
	Visit Pharmacy	77	26	114	39	191	33
	take Home treatment	0		38	13	38	6
	Nothing	0		9	3	9	2
3	Preventing malaria using insecticide a bed net						
	Yes	194	66	157	54	351	60
	No	100	34	136	46	236	40
4	Learn about HIV/ AIDS						
	Yes	254	86	197	67	451	77
	No	40	14	96	67	136	23
5	HIV/ADIS Test						
	Yes	155	53	85	29	240	41
	No	139	47	208	71	347	59
6	know how to use first aid kits						
	Yes	199	68	164	56	363	62
	No	95	32	129	44	224	38
7	First Aid kits in your home						
	Yes	56	19	45	15	101	17
	No	238	81	248	85	486	83
8	Utilization of Packages at home						
	Yes	228	78	188	64	416	71
	No	66	22	105	36	171	29
9	Reasons for not implement and use the UHEPa						
	some packages not important	33	50	28	26	61	36
	some package do not know how to use	29	44	45	43	74	43
	cost/need money	4	6	33	31	37	21
10	Community perception on the relationship with UHE-Ps						
	Very good	99	34	80	27	179	31
	Good	160	54	145	50	305	52
	Poor/bad	35	12	68	23	103	17

Table 6. Factors associated with utilization of urban health extension packages

Variables	Model HHs				Non-model HHs			
	UHEPa Utilization		COR	AOR	UHEPa Utilization		COR	AOR
	Yes	No	(95% CI)	(95% CI)	Yes	No	(95% CI)	(95% CI)
Heard about urban health extension program								
No	7	23	1	1	34	46	1	
Yes	218	46	2.66(1.262,3.964)	**2.35(1.075,3.415) ****	155	58	0.934(0.516,1.691)	1.1(0.591,1.938)
Home visits by urban health extension professionals								
No	52	27	1	1	62	77	1	1
Yes	205	10	3.125(1.018,4.231)	1.35(0.063,2.751)	127	27	1.288(0.759,2.186)	0.776(0.457,1.318)
Frequency of home visits by urban health extension professionals								
Once per Quarter	29	2	1	1	66	17	1	1
At least once per month	163	53	3.321(1.723,4.168)	**2.114(1.002,3.125) ***	57	14	0.344(0.030,3.989)	0.624(0.200,1.944)
Knowledge of Urban health extension packages (UHEPa) Components								
No	32	15	1		73	61	1	1
Yes	222	25	2.075(1.039,3.145)	**3.135(2.429,4.470) ****	129	30	0.107(0.091,0.281)	1.088(0.533,2.224)
Mothers' occupation								
Government employees and others	97	24	1	1	75	41	1	1
House wife	128	45	2.84(0.39,20.8)	0.349(0.037,3.249)	114	63	3.62(0.342,40.712)	0.428(0.019,9.081)
Family (HHs) income								
≤1900	25	15	1	1	29	10		1
≥1901	226	28	2.343(1.015,3.033)	1.958(0.018,2.582)	217	37	0.692(0.310,1.546)	1.514(0.289,7.102)
Household Graduation status								
No	41	28	1	1	0	104	1	1
Yes	209	16	4.11(2.106,6.203)	**3.052(2.024,5.113)**	0	189	1.82(0.0-0.0)	0
Community perception on quality of health service								
Poor (Bad)	25	8	1	1	26	20	1	1
Good	200	61	1.003(0.42,2.43)	1.351(0.462,3.949)	163	84	0.172(0.832,3.415)	1.22(0.53,2.8)

Note: *Reference Category * P-value <0.001, **P-value ≤0.05 cut off points for AOR*

Statements and Declaration

Data availability

The raw data used for this study can be made available with a reasonable request from the corresponding authors.

Competing interests

The authors declare that there is no competing interest.

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