



Research article

Households' access to an improved latrine and its associated factors among households of sanitation marketing products users and non-users, Northeast Amhara, Ethiopia

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ABSTRACT

Sanitation marketing is an approach to increase access to the improved latrine on a large scale which helps households to promote proper utilization of sanitary facilities. It helps to close the huge sanitation access gap in developing countries like Ethiopia. This study aimed to assess households' access to an improved latrine and its associated factors among sanitation marketing product users and non-users in Dessie Zuria District, Northeast Amhara, Ethiopia. A community-based comparative cross-sectional study was conducted among 640 households, in 2021. Multi-stage sampling techniques and a structured questionnaire were used. Data were checked, coded, and entered into Epi-info version 7 and exported to Statistical Package for Social Sciences version 23.0 for analysis. Binary logistic regression was employed to determine factors associated with improved latrine access. The study revealed that overall 59.8% of the households had access to improved latrines. Of this, 75.2% (95% Confidence Interval (CI): 70, 80) of households were Sanitation marketing products users; and 44.2% (95% CI: 39, 50) of households were from non-users of Sanitation marketing products. Being female household head, Adjusted Odds Ratio (AOR) = 4.3, 95% CI: 1.69, 10.59; urban residence, AOR = 2.5, 95% CI: 1.23, 5.19; water access, AOR = 3.3, 95% CI: 1.63, 6.57 were significantly associated with access to the improved latrine in sanitation marketing products users households, while being a female household head, AOR = 7.3, 95% CI: 3.68, 14.39; urban residence, AOR = 2.8, 95% CI: 1.64, 4.77; water access, AOR = 2.4, 95% CI: 1.44, 4.10 were significantly associated with access to the improved latrine in non-user households of sanitation marketing products. Access to improved latrines is still a big problem in both households of sanitation marketing product users and sanitation marketing product non-users. Gender, residence, water access, supportive supervision, knowledge, and availability of sanitation hardware stores were found to be significant predictors of household access to an improved latrine. Hence, evaluating policies and strategies of sanitation marketing approach on improved sanitation facilities is recommended.

1. Introduction

Lack of sanitation is a serious health problem that affects billions of people around the world, predominantly the developing countries [1]. When human beings do not have access to sanitation facilities, they suffer in the overall socio-economic and environmental existence. The main health problems, especially in developing countries are the results of poor access to potable water, poor hygiene, and sanitation practices. In these cases, sanitation is a basic necessity that affects everyone's life [2].

World nations have been working for the past two decades to double the number of people who have access to improved sanitation by 2015 [3] to address the deficiencies of latrines and support communities to improve and upgrade the sanitation facilities, introducing the principles and mechanisms of Sanitation Marketing is critical [4].

Sanitation marketing is the application of the best social and commercial marketing practices to change behavior and to scale up the demand and supply for improved sanitation, particularly among the poor. Sanitation marketing as strengthening supply by building capacity of the

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local private sector. It is about more than just training masons. It involves a more comprehensive demand and supply strengthening strategy drawing on social and commercial marketing and behavior change communication approaches. Sanitation marketing can be applied for much more than increasing coverage of improved sanitation. It can support a wide range of behaviors including ceasing to defecate in the open, cleaning and maintaining the facilities, improving management of children's feces, and washing hands with soap after toilet use [5]. Sanitation marketing has many experience worldwide particularly in developing world [6, 7, 8].

About 39% of the world population does not have access to improved sanitation and open defecation is largely a rural phenomenon most widely practiced in southern Asia and sub-Saharan Africa [9]. Sub-Saharan Africa remained the furthest behind in its progress toward accelerating access to improve latrine facilities. Only 24% of the rural population was using an improved sanitation facility [10]. In Sub-Saharan Africa including Ethiopia, the proportion with the population for access to improved sanitation services increased from 8% in 2000 to 31% in 2017 [11].

According to the 2016 Ethiopian Demographic and Health Survey report, 56% of rural households use unimproved toilet facilities [12]. So to improve water sanitation and hygiene throughout the country, the Ministry of Health set the goal that every household should have access to water, sanitation, and hygiene, and also a large-scale intervention was implemented [13], though the problem still exists. Efforts to increase access to improved latrines help to promote the proper utilization of sanitary facilities [14]. Sanitation marketing is important to promote improved sanitation technology for upgrading and new construction to meet the global and national commitments including health sector development program-IV, universal access program-II, and the millennium development target [6].

In developing countries, for instance in Peru, sanitation marketing was established in pilot areas in 2007 and then led to an increase in improved latrines in less than 3 years by 11% [15]. Benin provides the first example of a fully developed and tested national rural sanitation program that adapts sanitation marketing to the rural African development context. Benin has championed the development and operation of a highly innovative rural sanitation marketing program. Within the first one-and-a-half-year promotion cycle launched in 2005, the program resulted in a 10% increase in improved sanitation coverage [16].

Recent studies showed that access to sanitation marketing products improved basic sanitation services in the community significantly [7, 8, 15]. Hence, the idea of sanitation marketing has been introduced in Ethiopia recently and is being implemented in some parts of the country, since 2012 [17]. Sanitation marketing in Ethiopia has focused on five steps: Market assessment; Product design and prototype testing; Business model development; Sales tests; and Implementation plan for roll out of the business model [17]. However, its impact on access to improved latrine is not studied yet. Therefore, the main objective of the study was to assess access to an improved latrine and its associated factor among sanitation marketing product users and non-users Kebeles of Dessie Zuria district, Northeast Amhara, Ethiopia.

2. Methods and materials

2.1. Study design and area

A cross-sectional study was carried out in the Kebeles of Dessie Zuria district from April 01, 2021, to May 2021. The area is located in the South Wollo Zone of Amhara Regional State located 400 km to the north of the capital, Addis Ababa. It is bordered on the South by Albuko and Wereilu, on the northwest by Tenta, on the north by Kutaber, on the northeast by Tehuledere, the east by Kalu. The district has thirty-three Kebele (the smallest local administration structure) stratifies into two subgroups that are sanitation marketing product users (fifteen Kebele) and non-users (eighteen Kebele). There are 12 private and 8 governmental health centers and 32 health posts exist in the study area. Community Led Total

Sanitation and Hygiene (CLTSH) was launched in 2013 and was implemented in all kebeles right now. Later, sanitation marketing was begun in February, 2018. The list of sanitation marketing products supplied was SaTo pan, Duca Saton, Sil Africa, concrete slab and water purifier.

2.2. Study population

The study population comprised all households in randomly selected Kebeles of Dessie Zuria district. Households head or member greater than 18 years of age and had stayed in the area for at least 6 months.

2.3. Sample size

The sample size was calculated using double the population proportion formula with the assumption of $Z_{\alpha/2}$ is the critical value of the Normal distribution at $\alpha/2$ (for a confidence level of 95%, α is 0.05 and the critical value is 1.96), Z_{β} is the critical value of the Normal distribution at β (for a power of 80%, β is 0.2 and the critical value is 0.84), $p_1 = 35.9\%$ (35.9% (95%CI; 30.9, 40.9) of households in a rural community of Limo Woreda access of improved sanitation facility among sanitation marketing product non-users district) $p_2 = 0.5$ since there are no other studies shows the prevalence of access of improved latrine among sanitation marketing product users district. A design effect of 1.5 and a non-response rate of 10% were considered. Accordingly, a total of 640 study subjects were calculated for the study with a ratio of 1:1.

2.4. Sampling technique

Systematic random sampling was applied to select the study subjects. Five Kebeles (25% of 18 Kebeles) from non-users and 4 Kebeles (25% of 15 Kebeles) from users were selected using simple random sampling. Then 640 households with access to latrines were selected by using systematic random sampling from each selected Kebeles using proportional allocation to the size of Kebeles.

2.5. Operational definition

Access to improved latrine facilities: Households who use improved sanitation facilities to ensure hygienic separation of human excreta from human contact includes private improved pit latrines (PIPL), private traditional pit latrines (PTPL) with slab and superstructure, composting toilets, and flush or pour-flush toilets linked to sewage systems and septic tanks [18].

Attitude: Respondents were asked attitude-related questions the five points on Likert scale ranged from strongly disagree to strongly agree. After computing the respondent's score on the Likert scale, each respondent was dichotomized as having a positive attitude or a negative attitude. Positive Attitude \geq mean score, while negative attitude $<$ mean score.

Improved sanitation facilities: Households who have facilities such as flush/pour flush (to piped sewer system, septic tank, pit latrine), ventilated improved pit (VIP) latrine, pit latrine with slab, and composting latrine WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation [19].

Knowledge: Respondents were asked knowledge-related questions and the right answer was given a value of 1 and for those incorrect answers a value of 0 was given. The total score was computed by summing up all the items together. The respondent's score was dichotomized as good knowledge or poor knowledge. Good knowledge \geq mean, while poor knowledge $<$ mean.

Sanitation marketing product users: Households who get access to improved sanitation facilities hardware of trademark (SaTo pan, Ducato toilet, Sil Africa, etc.) from the local market. Households who get access to sanitation marketing products in the commercial market upgrade their sanitation and hygiene facilities.

Table 1. Socio-demographic characteristics of study respondents in Dessie Zuria district, South Wollo zone, Northeast Ethiopia, 2021.

Variables	Variable category	Sanitation marketing product users	Sanitation marketing product non-users	Total
		N (%)	N (%)	N (%)
Head of the households	Male	234 (73.6)	219 (70.2)	450 (71.9)
	Female	84 (26.4)	93 (29.8)	180 (28.0)
Residence	Urban	133 (41.8)	134 (42.9)	267 (42.38)
	Rural	185 (58.2)	178 (57.1)	363 (57.62)
Age of households head (year)	18–28 year	9 (2.8)	12 (3.8)	21 (3.33)
	28–38 year	81 (25.5)	65 (20.8)	146 (23.17)
	38–48 year	146 (45.9)	156 (50.0)	302 (47.94)
	48–58 year	75 (23.6)	74 (23.7)	149 (23.65)
	Above 58 year	7 (2.2)	5 (1.7)	12 (1.90)
Educational status of households head	Non-formal	72 (22.6)	104 (33.3)	176 (27.94)
	Grade 1–8	157 (63.2)	164 (52.6)	321 (50.95)
	Grade 9–12	33 (10.4)	32 (10.3)	65 (10.32)
	College+	56 (3.8)	12 (3.8)	68 (10.79)
Health insurance	Yes	288 (90.6)	263 (84.3)	551 (87.46)
	No	30 (9.4)	49 (15.7)	79 (12.54)
Family Size	≤5	101 (31.8)	72 (23.1)	173 (27.46)
	>5	217 (68.2)	240 (76.9)	457 (72.54)

Sanitation marketing product non-users: Households who didn't get access to improved sanitation facilities hardware of trademark (SaTo pan, Ducato toilet, Sil Africa, etc.) from the local market.

2.6. Data collection technique

A structured questionnaire was developed for data collection having reviewed different literature. The tool was designed to gather information on sociodemographic characteristics of households, Environmental factors, behavioral factors, access and availability of improved latrine, sanitation facilities, knowledge and attitude of improve latrines. The data collection was conducted by eight nurses who have diploma certificates and work experience, and two health officers with BSc degrees and familiar with the local language were involved in the data collection and supervision processes. In addition, 6 community leaders were included as local guides. The pre-tested questionnaire was administered to the household head.

2.7. Data quality assurance

To assure the quality of data both the interviewers and supervisors were trained for two days by the principal investigator. The training was

given in local language on administering the question. Field supervisions and daily meetings during data collection were intense to ensure the quality of data collection. A pre-test of the questionnaire was done on 5% of the sample size in the non-participant district.

2.8. Data management and analysis

Completed questionnaires were first checked for completeness, and codes were given to each questionnaire. Afterward, data were entered into Epi Info software version 7. Data were cleaned and then exported to Statistical Package for Social Sciences (SPSS) software Version 23.0 for analysis. Descriptive statistics were performed using frequency distribution and percentages that were displayed using tables and figures.

Binary logistic regression analysis was made to identify variables having an association with the dependent variable (Sanitation marketing products). Then all independent variables with a p-value less than 0.25 in the bi-variable analysis were again subsequently included into multivariable logistic regressions to control the effect of confounding variables among sanitation marketing product users and non-users. The multi-collinearity effect was checked using variance inflation factors (VIF). P-value less than 0.05 was taken as significant in multivariate analysis.

Table 2. Environmental factors of the study respondents in Dessie Zuria district, South Wollo zone, Northeast Ethiopia, 2021.

Variables	Variable category	Sanitation marketing product users, N (%)	Sanitation marketing product non-users, N (%)	Total, N (%)
Water access	Yes	217 (68.2)	123 (39.4)	340 (53.96)
	No	101 (31.8)	189 (60.6)	290 (46.0)
Distance from Dessie town	≤10 km	72 (22.6)	69 (22.1)	141 (22.3)
	10 m–20 km	143 (45.0)	138 (44.2)	281 (44.6)
	20 km–30 km	75 (23.6)	71 (22.8)	146 (23.17)
	>30 km	28 (8.8)	34 (10.9)	64 (10.1)
Distance from the health post	≤1 km	38 (11.9)	52 (16.7)	90 (14.2)
	1 km–5 km	153 (48.1)	128 (41.0)	281 (20.3)
	>5 km	127 (39.9)	132 (42.3)	259 (41.1)
Flood problem	Yes	77 (24.2)	89 (28.5)	166 (26.3)
	No	241 (75.8)	223 (71.5)	464 (73.6)

All available sanitation hardware.

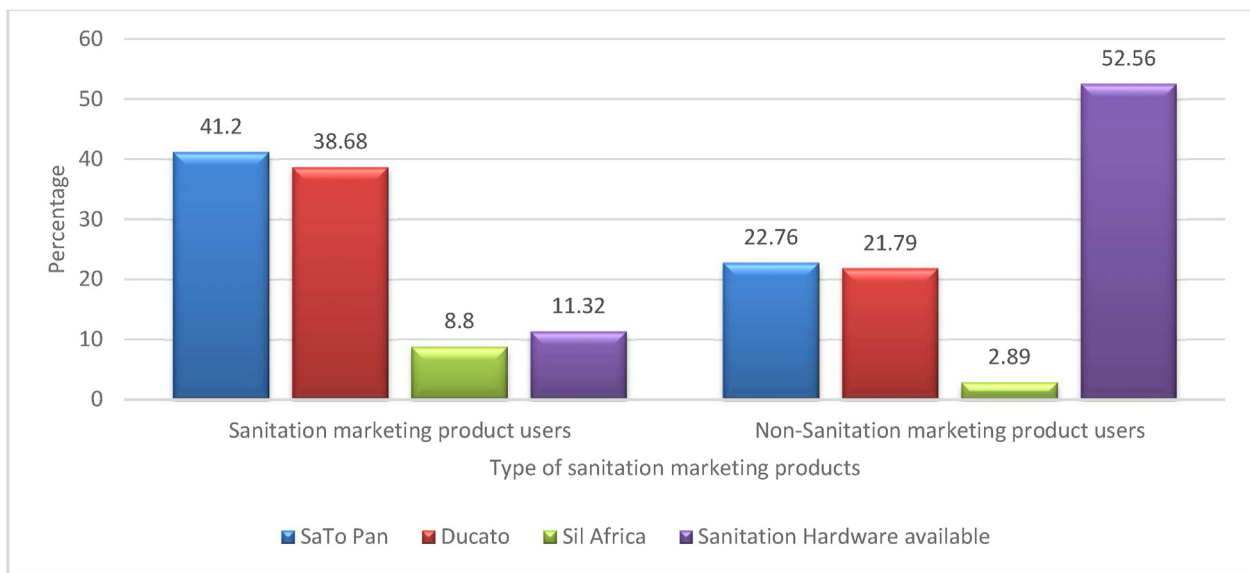


Figure 1. All available sanitation hardware among sanitation marketing product users and non-users of Dessie Zuria district, South Wollo zone, Northeast Ethiopia, 2021.

2.9. Ethical clearance

The ethical approval was obtained from the Medical Ethical Review Board of Bahir Dar University, College of Medicine and Health Sciences, School of Public Health. Permission for data collection was obtained from respective local administrative bodies. Before starting data collection, the participants had read the objective, benefits, and risks of the study to get informed verbal consent of participants. The right of the respondent to withdraw from the interview or not to participate was respected. To keep the confidentiality of any information provided by study participants, the data collection procedure was anonymous and their privacy during the interview were respected.

3. Results

3.1. Socio-economic characteristics

A total number of 630 households (318 sanitation marketing product users and 312 non-users) in the Dessie Zuria district, were included in the study with a response rate of 98%. Of the total households, 450 (71.9%) were predominantly headed by males, 363 (57.6%) of the households live in a rural area and 551 (87.5%) had community-based health insurance. The mean ± standard deviation age of the households head was

43.47 ± 7.69 years in sanitation marketing product users and 44.03 ± 7.93 years in non-users. Most 457 (72.5%) of the households had a family size of more than five. Regarding the educational status of the household head, 321 (51%) attended primary (Grade 1–8) education (Table 1).

3.2. Environmental, technical and institutional factors

From the total households included in this study, 340 (54%) had access to water supply and the remaining 290 (46%) did not have access to a water supply. Out of the households, 464 (73.7%) never faced flood problems (Table 2).

Regarding the type of sanitation product available in the area, 41.2% of the respondents used SaTo pan in sanitation marketing product users. On the other hand, 22.8% of the respondents used SaTo pan in sanitation marketing product non-users but 52.6% of the respondent in sanitation marketing product non-users did not use any sanitation hardware (Figure 1).

3.3. Behavioral factors

About 374 (59.4%) of the respondents had good knowledge on sanitation marketing products. About, 393 (62.3%) of the respondents heard about improved sanitation facilities from different sources. But,

Table 3. Behavioral factors of the study respondents in Dessie Zuria district, South Wollo zone, Northeast Ethiopia.

Variables	Variable category	Sanitation marketing product users, N (%)	Sanitation marketing product non-users, N (%)	Total, N (%)
Knowledge	Poor	88 (27.7)	168 (53.8)	256 (40.6)
	Good	230 (72.3)	144 (46.2)	374 (59.3)
Information on improved sanitation facilities	No	113 (35.5)	124 (39.7)	237 (37.62)
	Yes	205 (64.5)	188 (60.3)	393 (62.38)
Responsible to build a latrine	Woman	4 (1.3)	1 (0.3)	5 (0.79)
	Man	128 (40.3)	164 (52.6)	292 (46.35)
	Both	186 (58.5)	147 (47.1)	333 (52.86)
Reason to construct a latrine	Privacy	140 (44.0)	57 (18.3)	197 (31.27)
	Convenience	84 (26.4)	150 (48.1)	234 (37.14)
	Safety	45 (14.2)	69 (22.1)	114 (18.1)
	Security for women and children	49 (14.4)	36 (11.5)	85 (13.49)
Attitude	Negative	95 (29.9)	175 (56.1)	270 (42.86)
	Positive	223 (70.1)	137 (43.9)	360 (57.14)

Table 4. Access to improved latrine among sanitation marketing product users and non-users and latrine conditions of Dessie Zuria district, South Wollo Zone, Northeast Ethiopia, 2021.

Variables	Variable category	Sanitation marketing product users, N (%)	Sanitation marketing product non-users, N (%)	Total, N (%)
The floor of the latrine is cleanable	No	79 (24.8)	174 (55.8)	253 (40.16)
	Yes	239 (75.2)	138 (44.2)	377 (59.85)
A slab of latrine is free from feces	No	79 (24.8)	174 (55.8)	253 (40.16)
	Yes	239 (75.2)	138 (44.2)	377 (59.85)
Height of latrine above 1.75	No	79 (24.8)	174 (55.8)	253 (40.16)
	Yes	239 (75.2)	138 (44.2)	377 (59.85)
A slab of latrine has a fly protection	No	75 (23.6)	174 (55.8)	249 (39.53)
	Yes	243 (76.4)	138 (44.2)	381 (60.48)
The roof of the latrine protected from rain and sunlight	No	33 (10.4)	174 (55.8)	207 (32.86)
	Yes	285 (89.6)	138 (44.2)	423 (67.15)
Latrine had a handwashing facility	No	63 (19.8)	145 (46.5)	208 (33.02)
	Yes	255 (80.2)	167 (53.5)	422 (66.99)
Water in handwashing facility	No	75 (23.6)	165 (52.9)	240 (38.1)
	Yes	243 (76.4)	147 (47.1)	390 (61.91)
Latrine has door	No	63 (19.8)	135 (43.3)	198 (31.43)
	Yes	255 (80.2)	177 (63.1)	432 (68.58)
Shared latrine	No	278 (87.4)	274 (87.8)	552 (87.62)
	Yes	40 (12.6)	38 (12.2)	78 (12.39)

237 (37.8%) of the respondent did not get any information about improved sanitation facilities. Concerning reasons for latrine construction, 140 (44%) of the respondents from sanitation marketing product users were for privacy and 150 (48.1%) of the respondents from sanitation marketing product non-users were for convenience (Table 3).

3.4. Access to improved latrine

From households included in this study, 377 (59.8%) had latrine with cleanable floor. Of those households who had latrines, 78 (12.4%) shared the existing facilities with other households (Table 4).

All the available sanitation facilities were 141 (44.3%) were ventilated improved pit latrine, 96 (30.2%) were pit latrine with slab and 79 (24.8%) were pit latrine without slab in sanitation marketing product users and 174 (55.8%) were pit latrine without a slab, 80 (25.6%) were ventilated improved pit latrine, 58 (18.6%) were pit latrine with a slab in sanitation marketing product non-users (Figure 2).

3.5. Factors associated with access to improved latrine among sanitation marketing product users and non-users

The selected variables were tested their contribution for access to improved latrine among sanitation marketing product users and non-users through binary logistic analysis. The variables that showed significant association ($p \leq 0.25$) were gender, residence, water access, training for latrine construction, supportive supervision, availability of sanitation hardware, funding money from the government, locally available sanitation hardware, skilled mason, knowledge, and attitude from sanitation marketing product users and non-users. These variables were retained for multivariate analysis.

Gender, residence, water access, supportive supervision, availability of sanitation hardware, knowledge and attitude in sanitation marketing product users and Gender, residence, water access, supportive supervision, knowledge, and attitude in sanitation marketing product non-users were found to be significant predictors of access to the improved latrine ($p < 0.05$) in the multivariate analysis (Table 5).

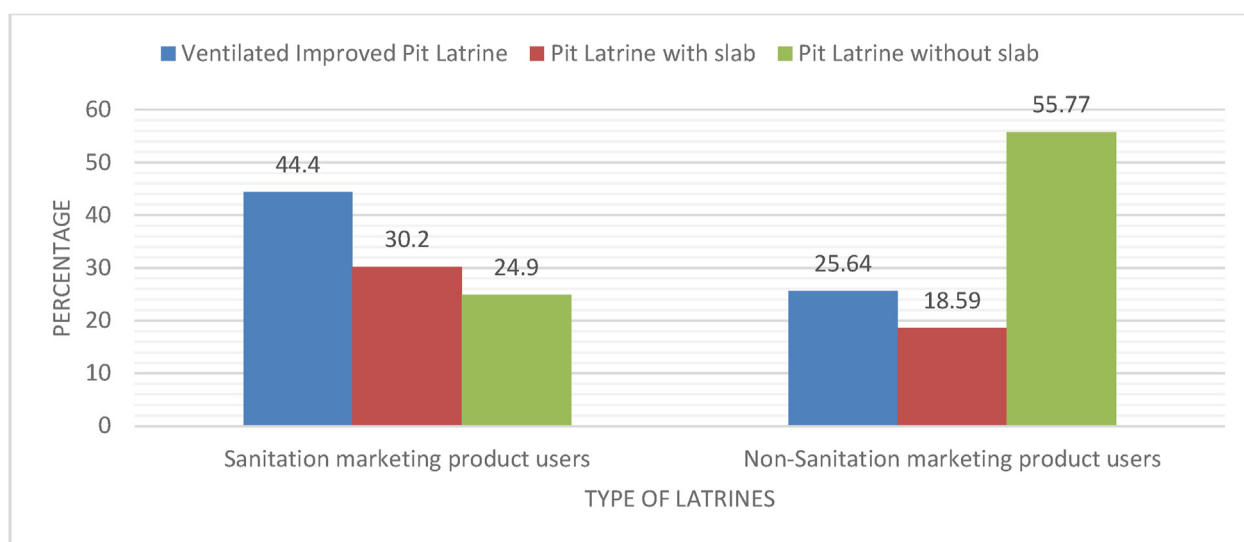


Figure 2. All available sanitation facilities among sanitation marketing product users and non-users of Dessie Zuria district, South Wollo zone, Northeast Ethiopia, 2021.

Table 5. Factors associated with access to improved latrine among sanitation marketing product users and Non-users of Dessie Zuria district, South Wollo zone, Northeast Ethiopia, 2021.

Variables	Access to an improved latrine		COR (95% CI)	AOR (95% CI)	
	Yes	No			
Sanitation marketing product users					
Gender	Female	77	7	4.9 (2.15, 11.12)	4.3 (1.69, 10.59)
	Male	162	72	1	1
Water access	Yes	174	43	2.24 (1.32, 3.79)	3.3 (1.63, 6.57)*
	No	65	36	1	1
Residence	Urban	127	58	2.41 (1.39, 4.26)	2.5 (1.23, 5.19)
	Rural	112	21	1	1
Supportive supervision	Yes	161	30	3.4 (1.99, 5.72)	2.8 (1.44, 5.49)*
	No	78	49	1	1
Sanitation hardware store	Yes	139	22	3.6 (2.07, 6.27)	4.0 (2.05, 8.13)**
	No	100	57	1	1
Knowledge	Good	190	40	3.8 (2.20, 6.49)	2.5 (1.23, 5.04)*
	Poor	49	39	1	1
Attitude	Positive	181	42	2.8 (1.62, 4.68)	2.3 (1.15, 4.53)*
	Negative	58	37	1	1
Sanitation marketing product non-users					
Gender	Female	59	34	3.1 (1.86, 5.09)	7.3 (3.68, 14.39)
	Male	79	140	1	1
Water access	Yes	68	55	2.1 (1.32, 3.34)	2.4 (1.44, 4.10)*
	No	70	119	1	1
Residence	Urban	63	115	2.3 (1.46, 3.67)	2.8 (1.64, 4.77)
	Rural	75	59	1	1
Supportive supervision	Yes	106	118	1.6 (0.95, 2.61)	2.1 (1.15, 3.79)*
	No	32	56	1	1
Knowledge	Good	76	68	1.9 (1.22, 3.01)	2.1 (1.29, 3.58)*
	Poor	62	106	1	1
Attitude	Positive	72	65	1.6 (1.04, 2.56)	1.8 (1.06, 2.92)*
	Negative	66	109	1	1

4. Discussion

The findings of this study showed that 59.8% of the households (75.2% in sanitation marketing product users and 44.2% in non-users) had improved latrines. This result is consistent with previous findings conducted in Malawi on opportunities and constraints for more sustainable sanitation through sanitation marketing and in Vietnam on the sustainability of rural sanitation marketing in which 61% and 63% of the households had improved latrine respectively [20]. The result of the studies conducted was higher than others study done in Ethiopia on availability of improved sanitation facilities and associated factors, Indonesia and Ghana in which 35.9%, 40%, and 12% of the households had improved latrine respectively [21]. This variation might be a lack of sanitation hardware, knowledge, attitude, locally available materials. In addition, this proportion of access to improved latrine found in this study was lower than other studies done in Vietnam and India in which 74% and 73% of the households had improved latrine in respective order. This variation might be due to the shortage of water and lack of skilled mason in the present study.

Female-headed households were more likely to have improved latrine in sanitation marketing product users and non-users respectively as compared to male-headed households. This is consistent with a study conducted in Zambia on determinants and inequalities in access to improved water sources and sanitation [22].

Households who live in urban areas were more likely to have improved latrine in sanitation marketing product users and non-users respectively as compared to households who live in rural areas. This is consistent with a study conducted in Vietnam on household trends in access and associated factors to improved water sources and sanitation facilities [23].

Water access in sanitation marketing product users and non-users were more likely to have access to improved latrine as compared to households that did not have. This is consistent with a study conducted in Indonesia on geographical and socioeconomic disparities in access to improved sanitation facilities [24].

Respondents who get supportive supervision in sanitation marketing product users and sanitation marketing product non-users were more likely to have access to improved latrine as compared to respondents that did not get. This is consistent with a study conducted in Bangladesh on the long-term sustainability of improved sanitation facilities [25].

Availability of sanitation hardware stores in the community was more likely to have improved latrines as compared to areas that had not available. This is consistent with a study conducted in Vietnam on the sustainability of rural sanitation marketing and in Malawi on opportunities and constraints for more sustainable sanitation through sanitation marketing [26].

Households who had good knowledge on improved latrine were more likely to have improved latrine in sanitation marketing product users and non-users as compared to households that had not. This is consistent with a study conducted in Gemena, Democratic Republic of Congo, on sanitation marketing in a fragile context [7].

Households who had a positive attitude towards improved latrine were more likely to have access to the improved latrine in sanitation marketing product users and non-users as compared to households that had not. This is consistent with a study conducted among the rural community of Myinmu township, on social disparities and accessibility of sanitation marketing factors [8].

The strength of this study is using a comparative (with two population) cross-sectional study design is to compare improved sanitation access among sanitation marketing product users and non-users in the

district, which provide better understanding the impact of sanitation marketing in the improvement of the sanitation services in the area. Moreover, the study used relatively large sample size, which is nearly a double size to the minimum sample size. Whereas the limitation of this study should have been studied in a separate district rather than on the same district to minimize information contamination among sanitation marketing product users and non-users.

5. Conclusion

More than half of the households had access to an improved latrine of these two-thirds of the household were sanitation marketing product users. This implies that using sanitation marketing products contributed to access to improved latrines. Gender, residence, water access, supportive supervision, knowledge, and attitude in sanitation marketing product users and sanitation marketing product non-users Kebeles and availability of sanitation hardware store in only sanitation marketing product users Kebeles were found to be significant predictors of households' access to an improved latrine. Hence, evaluating policies and strategies of sanitation marketing approach on improved sanitation facilities, and also evaluating strength and weakness of sanitation marketing approach on improved sanitation facilities is recommended for to concerning parties.

Declarations

Author contribution statement

Wendye Asrate: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Amha Admasie: Conceived and designed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Tebkew Shibabaw: Conceived and designed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data.

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Data availability statement

Data will be made available on request.

Declaration of interest's statement

The authors declare no conflict of interest.

Additional information

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